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Gentrification in Canadian inner cities: An investigation of major factors (Montreal, Quebec, Toronto, Ontario, Winnipeg, manitoba, Vancouver, British Columbia)

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Gentrification in Canadian Inner Cities: An Investigation of Major Factors

By

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ABSTRACT

Over the past two decades, the literature regarding gentrification has become extensive. More recently, a smaller body of research has emerged. This research, which takes a more theoretical approach, accepts some of the views of earlier literature, but places an emphasis on explaining the underlying causes of gentrification, rather than describing its instances. The purpose of this thesis has been to consider recent literature on gentrification in terms of whether a relationship exists between contemporary demographic and societal changes and the process of gentrification. This has been accomplished by using three methods. The first method involves the computation of growth coefficients. These coefficients, or rates of change, show the percentage of positive or negative growth for each variable in each centre, over time. The second method uses two sets of location quotients. These quotients compare the concentration of each variable in core neighbourhoods relative to the defined outer city, and CMA, during the given time period. Finally, the third method makes use of location quotients computed for each variable and census tract. This method not only gives a more detailed picture of change in the inner city itself, but is also instrumental in the identification or outliers, or extreme cases. Thus, by analysing patterns of change in core neighbourhoods in Montreal, Toronto, Vancouver, and Winnipeg over a fifteen year time period, and by utilizing several well known gentrifying variables, the results show that although some aspects of the known characteristics of gentrification and the theory discussed in this thesis may be confirmed, it is clear that some aspects may not. In terms of the results of this thesis, only the findings for young males, male professionals, individuals with university degrees, and to a limited extent female professionals, can lend support to the well known characteristics or definition of gentrification. Other aspects which include working females, and small families are clearly decreasing, and therefore can not be seen to support the evidence for gentrification. With regard to the females, it is clear that since young working women are fairly evenly dispersed throughout the entire CMA, and that the proportion of professional women is decreasing in core neighbourhoods, the link between these women and the gentrification process can not be supported. Overall, the results for this thesis indicate that the inner city is being shaped by a number of complex forces and trends, and by 1986 some of the well known contributors to the process of gentrification do not seem to be as predominant as they may have been in the past. Moreover, while the inner city is an attractive locational choice to some, it is not able to compete as well for housing demand as some of the more peripheral areas can.

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CHAPTER I: INTRODUCTION

The changing patterns of inner cities have long been a focus for study by academics and scholars in the field of urban geography. One of the well established topics concerning the inner city is the process of *gentrification*. This process, which has been examined extensively in the past two decades, has also been the cause of much debate in both Canada and the United States. Traditionally, the process has been understood to involve the upgrading of older, deteriorated housing in central city neighbourhoods by an incoming, more affluent population. Further, this population was most often characterized by small household sizes, with few or no children, high levels of education, and professional occupations (Lipton 1977; Holcomb and Beauregard 1981; Weston 1982; Clay 1983; Gale 1983; Ley 1983, 1986; Bunting 1986; Filion 1987).

Much of the literature from the 1970s and early 1980s regarding gentrification has been dominated by two approaches. According to Smith (1987) the first approach involved "collecting descriptive information about specific cases of gentrification " (pp. 462), and employing an empirical method to obtain results. In many cases, this approach involved highlighting the traits of gentrifiers and the conditions before and after gentrification (Beauregard 1990). The second approach has generally been more theoretical, and more concerned with "explaining the underlying causes of gentrification rather than describing its instances" (Smith 1987, pp. 462).

However, the mid and late 1980s brought forth a shift in studies of gentrification. This shift was an expression of the need of many researchers to "bridge the gap" between empirical and theoretical approaches (Smith 1987, pp. 462). Thus, according to this philosophy, any meaningful research must view gentrification as a complex, and varied process, which must be conceptualized at a number of different levels (Williams 1986). These scholars also propose that future research on gentrification should focus more on the broader context of changing processes occurring in modern society. Thus, it is through studying gentrification in a broader context that a better understanding can be gained as to where the process fits into the complex nature of change in contemporary metropolitan areas. Researchers like Rose (1984) postulate that such an understanding can not be gained by studying gentrification in isolation of these events. Rose's work is particularly interesting since it places great emphasis on the need to understand more fully the role that women play in the gentrification process, especially in a contemporary society where female labour participation rates are increasing (Statistics Canada 1987). Others too, have acknowledged the fact that women can be linked with population and societal changes, and ultimately, household decisions as well (Alonso 1980; Hayden 1981; McDowell 1983; Holcomb 1984). These household decisions, which affect the nature of gentrification and inner city revitalization, are very often complex, and should therefore be understood to reflect general trends in contemporary urban society.

Hence, this study proposes to examine the changing trends in contemporary Canadian cities in the following manner. By utilizing some of the theories mentioned above, which suggest that a variety of demographic and societal forces

may have influenced the nature and extent of gentrification, the research will consider several well known "gentrifying" variables in four Canadian cities over a fifteen year time period. Thus, the overall research objective is to examine whether changes in these variables are reflecting the nature of modern demographic/societal changes and the process of gentrification. Further, the study will consider changes in the inner city as compared to other areas, to determine if typical gentrifying variables are really exclusive to the inner city, as much of the earlier gentrification literature implies. Finally, the data for the research comes from Statistics Canada Census Publications, at the census tract level, for the years 1971, 1976, 1981, and 1986.

The research is divided into five chapters. Chapter Two involves a review of some of the urban literature pertaining to gentrification and inner city change. First, the problem of inner city decline is examined and the more traditional models of urban form are discussed. This leads to the examination of the gentrification process, which is viewed as an exception or reverse to the traditional process of suburbanization. Later, the process itself is examined in more detail, leading to the notion that "gentrification occurs in conjunction with distinctive demographic, economic, and lifestyle factors" (Williams 1983, pp.3). At this point, more recent literature is introduced which expands on the ideas of traditional gentrification research, and serves as an inspiration for this study.

Chapter Three describes the research procedure and the underlying theoretical considerations and hypotheses which lead to it. This chapter links together the goals and objectives of the research within the constraints of the collected data.

Chapter Four presents the results of the study. These results are divided in three parts and describe the changing trends which have occurred in the study areas over the last fifteen years. In addition, the results are analysed and interpreted as they relate to the theory presented in the thesis.

Finally, Chapter Five serves as a summary of the findings in the context of the research objectives and the theory outlined in the thesis. Suggestions for future research in this direction are also made.

CHAPTER II: REVIEW OF LITERATURE

INTRODUCTION

The purpose of this chapter is to review some aspects of the literature pertaining to the process of gentrification and inner city change, which is the focus of this thesis. The chapter begins with a discussion of some of the aspects of the process of inner city change, and serves as background to studies on gentrification. This section includes several factors which have led to the decline of central cities, as well as the traditional models of urban form and neighbourhood transition, where decline is deemed as an inevitable component of change.

Since the process of gentrification is an established phenomenon which has been observed in many central cities, and since it is also an important component of this research, the need to understand some of its underlying ideas is essential. Thus, earlier approaches to research on gentrification are introduced and discussed. These approaches were viewed as a reverse to conventional processes of urban decline. The section includes the consideration of the potential and extent of gentrification as well as some differences between Canada and the United States. The final portion of the chapter introduces some aspects of a more recent body of literature which takes a different approach to understanding gentrification and the dynamics of inner city change. This literature largely emphasizes the importance of gentrification as a complex process where any meaningful study must combine both empirical and theoretical components of research. This shift in academic thinking,

which emerged in the mid and late 1980s, has served as an inspiration and a focus of this thesis.

THE PROCESS OF INNER CITY CHANGE

INNER CITY DECLINE

Since the early 1900s, academics and scholars have believed the inner city to be the focus of urban housing problems. The main reason for this perception stems from the fact that most of the housing stock within the central city has been characterized through time by deterioration and neglect. Two major factors in this process of decline are the age of housing, and the type of population. According to McLemore (1974), Canadian inner cities have experienced population losses, with core areas being characterized by low income groups, and a large proportion of residents either 65 years of age or over, or fifteen and under. In addition, unemployment rates, levels of tenancy, and housing turnover rates have the tendency to be high.

Others have suggested the importance of *push* and *pull*, or *centrifugal* and *centripetal* forces in the deterioration process (Colby 1959). These two factors serve to lure people out of the central city, while at the same time create a desire for that move. *Push* factors include aging and delapidated buildings, high land values and taxes, and rising levels of crime. *Pull* factors include larger portions of lower priced properties for industry and housing in the periphery, the quietness and rural life

setting of the suburbs, and the perceived homogeneity of suburban neighbourhoods, (Williams 1983). Moreover, these areas have been perceived as desirable environments for the growth of families and the rearing of children. The end result is the degeneration of inner city neighbourhoods.

CONCENTRIC ZONE MODEL

In 1925, a model was developed by Ernest Burgess which attempted to explain the process of urban growth and decline. In his model, a city is characterized by five zones which radiate concentrically from the city centre. The first, and innermost land use zone is the Central Business District (C.B.D.). It is here that the majority of office towers, banks, recreation and entertainment centres are located. The second zone, which is generally characterized by the invasion of business and light manufacturing, has been termed by Burgess as the Zone of Transition. The third zone, although somewhat deteriorated, is primarily a residential zone where industry workers generally live. This is called the Zone of Workingmens' Homes. The next zone is the Residential Zone, which is mainly composed of single-family dwellings and upper income apartment buildings. The fifth and final concentric zone is the Commuter Zone, and is characterized by suburban areas and satellite cities.

An integral element of the model relates to the idea that the lowest income groups, in their need to be near the C.B.D. and employment opportunities, invade the residential areas in the inner city. At the same time, higher income groups

move outward leaving the poorest housing behind. This process has been termed by Burgess as *invasion and succession*. Thus, more intensive land uses replace less intensive ones in this fashion, and zones of transition occur where the boundaries of two zones meet. Most often, invasions are the result of commercial uses moving in, which, as stated by Mberengwa (1982), causes the "uprooting" of existing land uses in adjacent areas. The process continues into the peripheries and into zones of older residential neighbourhoods, and so on.

SECTOR MODEL

In 1939, Homer Hoyt developed a model which served to challenge the work of Burgess. After examining 142 U.S cities, Hoyt theorized that the growth of an urban centre occurred in a sectoral pattern. An important aspect of the Sector Model is that high rent areas tend to locate on the opposite side of the city to low rent areas, and also grow outward along major transportation routes (Hoyt 1959; Mberengwa 1982; Cadwallader 1985).

FILTERING

One of the main principles in the models of Hoyt and Burgess is the preference of higher income groups for new housing and larger portions of open space. It is through this idea that Hoyt introduces the concept of *filtering*. When the

construction of new homes draws higher income households to suburban areas, the homes they vacate become available to those of lower income. These groups will, in turn, release their homes to the next lower income group, and so on (Johnston 1971; Short 1978). Through this process households have the opportunity to improve their housing situation. It was Hoyt's belief that in the end, housing would "filter down" to those of the lowest socio-economic level where housing standards would be the worst. These conditions would force residents to abandon their homes in search of better housing.

There are two assumptions which may be associated with the filtering concept. First, as discussed by Williams (1983), it is assumed that when more and more repairs are necessary in order to maintain an aging house, or, as the style of the house no longer fits into modern household tastes, it will decline both in value and quality. Thus, newer housing is perceived as better housing, and it will be in demand. Finally, since traditional theories view the structure of urban places to be an evolution of outward flows towards fringe areas, it seems only natural, then, to view filtering as an irreversible downward process of people and housing in the central city. As a consequence, some models of housing change assume this philosophy to be justified (Lowry 1960; Hoover and Vernon 1962; Bourne 1967; Birch 1971; Johnston 1982; Solomon and Vandell 1982).

It was not long before scholars began to question the down-filtering concept. Andrews (1971) has indicated the existence of a *zone of uncertainty*, where the probability of conversion and redevelopment is high. According to Andrews, the future is unclear, and there is a possibility of either full-scale renewal or a collapse to irreversible slum conditions. An extension of Andrews' research can be found

in the work of Smith and McCann (1981), who recognize three stages within the zone of uncertainty, namely, single-family development, multi-family conversion, and apartment redevelopment. An analysis by Bunting (1986) terms these as the *pre-decline* phase.

Maher (1974) uses the term *filtering up* to challenge some of the existing views. In his study of Toronto, Maher states the importance of pre-development speculation and the demand of higher income groups for housing in the inner city as instrumental in the increase in central city land values. The study implies that price movements are related to dwelling type, socio-economic status, and occupancy status, and these are the variables which can be linked to the relative desirability of a residential area. As Maher states, "no longer do older houses depreciate and down-filter; they now appreciate as the site becomes desirable for rehabilitation or redevelopment". Further, since housing appears to be continually undergoing shifts in price and occupancy, it is possible to view filtering simply as a process by which certain areas change in desirability (Maher 1974). Bourne (1981) also questions the idea of down-filtering in his discussion of *passive filtering*, where there is no "moving of house", and *active filtering*, where an actual relocation occurs. Others have chosen to conceptualize the filtering process in a more general sense. Lowry (1960) defines filtering as "a change in the real value of an existing unit" (pp. 363). This change, is viewed by Lowry as being purely monetary. Thus, houses may filter either up or down, depending mainly on the balance of supply and demand between new housing construction and the existing stock. Lowry's definition also allows for the possibility that during filtering, occupants may or may not move, and other units may or may not be affected by the process.

Thus, on a purely supply and demand perspective, Lowry implies that filtering can only continue if the price of the existing stock is less than that of the newly constructed houses, assuming that the quality is the same between the two. In addition, the costs of maintaining the existing stock must not be greater than that of the expected return from the unit (Lowry 1960).

NEIGHBOURHOOD DEVELOPMENT AND DECLINE

In addition to the models of inner city change, some researchers attempted to understand this process by way of its effects at the neighbourhood scale. According to the traditional literature, neighbourhoods evolve through a series of stages. Hoover and Vernon (1962) question the rigidity of the Concentric Zone Theory in their five-stage model. *Stage 1* consists of residential development, with single-family houses and a rapid population growth. *Stage 2* is a transitional stage where construction and population growth continues, but apartment complexes are more abundant, many replacing older single-family housing. *Stage 3* is a down-grading stage where much of the older single and multi-family housing is being converted to higher density use. There is little new construction, and neighbourhoods are prone to crowding, with more ethnic and minority groups moving in. *Stage 4* is the "thinning-out" stage which is characterized by vacancy, abandonment, and demolition. There is little or no residential construction, and populations are significantly reduced. Finally, *Stage 5* brings renewal. Although there is little change in the population, delapidated areas of housing are replaced by

new multi-family units, and the overall quality and use of space is improved. Fortunately, Hoover and Vernon (1962) point out that decisions are involved when people move, and instead of simply "shoving over" into the next block, they often "leap-frog" to other areas where there are sites better suited to their needs.

Bourne (1967) creates a similar set of stages where *Stage 1* is characterized by initial construction and increased value. The maintenance and depreciation of buildings occurs in *Stage 2*, and modifications to accommodate new activities may be present. Finally, *Stage 3* brings the demolition and new construction of buildings. At this point, Bourne states that the cycle may begin once again.

Hughes (1975) develops a model of five stages which is very similar to that of Hoover and Vernon (1962). Hughes expands on *Stage 3* by indicating the existence of a large proportion of renters. There is landlord disinterest and tenant problems, and the deteriorating relationship between the two results in rising management and operation costs. In *Stage 4*, the resulting decline in cash flow encourages owner disinvestment and places further strains upon the landlord/tenant relationship. According to Hughes, the average household, existing at subsistence level, has social problems that are often so severe as to threaten the general safety and well-being of the neighbourhood.

Yet another stage model has been developed by Smith and LeFaivre (1984):

1. new construction
2. transition to landlord control
3. blockbusting
4. redlining
5. abandonment

Ley (1983) states that the typical five-stage model is somewhat inappropriate for the Canadian city. Using Edmonton as an example, Ley points out the existence of a three-stage process, with "distinct periods of conversion and then redevelopment being grafted on an initial landscape of single-family houses" (pp.262). The blight to abandonment situation in Stage 4 has not appeared and there has been no extensive public redevelopment. Ley concludes that in Canada, neither conversion nor apartment redevelopment has commonly been associated with declining neighbourhoods as the stage model implies. In general, Edmonton and other Canadian cities have experienced redevelopment in areas whose status either measured via income or quality of housing stock, tends to be above average, when compared to the American experience (pp. 262).

THE GENTRIFICATION PROCESS

EARLIER STUDIES OF GENTRIFICATION

Although much of the earlier literature viewed inner city decline as an inevitable and irreversible result of urban growth and progress, the mid-1970s brought forth a change in the attitudes of many homeowners. This change was based on a new desire to live within the central city and was termed the gentrification process. *Gentrification* begins when a population with a higher socio-

economic status than the existing population, moves into an inner city neighbourhood to upgrade the housing stock. Traditionally, most academics agreed that gentrification involved the rehabilitation of older, lower income housing by higher income homeowners, professional developers or landlords (Holcomb and Beauregard 1981; Smith 1982; Weston 1982; Ley 1984; Bunting 1984, 1986).

Numerous studies undertaken both in the United States and Canada have shown a pattern among gentrifying households. These households are generally characterized by couples or singles in the 25-34 age group, with few or no children. The majority of individuals have attained college or university degrees, and are thus employed in professional occupations. Where couples are concerned, it is not unusual for both individuals to work, and the majority of households have a middle to upper income status (Spain and Laska 1979; Holcomb and Beauregard 1981; Gale 1983, 1984; Bunting 1986; Covington and Taylor 1989).

As stated by Williams (1983), there has been a tendency to view the gentrification process as a *back-to-the-city* movement. However, a variety of studies have shown that this is not the case (Spain and Laska 1979; Hodge 1981; Gale 1983; Holcomb 1984; London and Palen 1984). These studies show that most of the gentrifying households originate from other neighbourhoods within the inner city. What the media has often stated as a movement of dissatisfied suburban homeowners into the city appears to be invalid. Perhaps this statement has been based on the idea that these individuals, who have been called *gentrifiers*, are the types of people one would expect to move to the suburbs, and yet, they do not.

Other studies have shown gentrification to occur in stages. Pattison (1983) identifies three types of gentrifying households. The first group is the *risk-oblivious*

people. These individuals are not worried about the possible outcomes and upgrade anyway. This group is usually characterized by artists, interracial couples, and in Pattison's example of Boston, the gay community. The need for their sometimes unconventional lifestyles to be socially accepted outweighs the uncertain risks involved in upgrading the neighbourhood. The *risk-prone* individuals make up the next wave of gentrifiers. These people have decided to gamble and hope for the best. Finally, the last group consists of the *risk-adverse* individuals who decide to invest after the risks have been assumed by others. These people are prepared to wait and pay a much higher price when the apparent success of gentrification causes land values to increase.

Some academics tend to view the gentrification process as a general result of changes in society. Demographically, these changes relate to smaller households, the decision of households to be career-oriented, the large number of women in the labour force, and lower fertility rates. Economically, inflation, and the high prices for housing have constrained many household budgets. In addition, another significant influence has been lifestyle changes (Goetze and Colton 1980; Holcomb 1984). A study by Ray (1985) indicates that there are significant differences between the lifestyles of suburban and inner city residents. Using Ottawa as an example, Ray finds both groups to be well educated, with high status jobs, and comparable incomes. However, inner city residents tend to spend more time out of the home, and thus, want to be located near major activities, i.e. theatre, restaurants, museums and so on. Suburban residents, on the other hand, prefer home-based activities, such as family outings, going to church, take-out food, VCRs, and

television. Ray concludes that people purchase homes in particular neighbourhoods for very distinct and well thought out reasons.

Another interesting aspect of the Ray study is the important, perhaps essential, role of women in the gentrification process. Although men showed no differences, inner city women were better educated, held higher status occupations, and had fewer children. These findings indicate the importance of women in the decision to locate in the inner city, and reflect the emerging influence of well-educated, upwardly-mobile women in society.

Researchers in the Marxist school of thought perceive the city to be influenced by economic forces which are manifested in the power of the ruling class. This class will build and rebuild the city to advance its own interests. Hence, the revitalization of the inner city is viewed as an exploitation by the middle and upper classes (Harvey 1972; Molotch 1976; Guterbock 1980; Wolfe, Drover, Skelton 1980). Another important aspect of Marxist thought is the "use value of the dwelling unit". For example, low income groups want to be closest to work because many cannot afford the high costs of transportation. High income groups exploit the inner city resurgence market for central city locations and cosmopolitan amenities. In general, most of the followers of Marxist philosophy will agree with the assumption that society is physically arranged as a result of private capital accumulation, class relations, and state intervention (Wolfe, Drover, Skelton 1980). As Bunting (1986) states, the gentrification process is heavily dependent upon "big business" and "big government". Others will argue that gentrification is a result of the specific needs of capital at a given time and not just a capitalistic organization of space (Smith 1979, 1982; Smith and LeFaivre 1984). However, this explanation does not account

for residential upgrading as a result of either economic constraints or contemporary household tastes (Gale 1983; Clark 1985).

Research in the early 1980s has emphasized the importance of social factors in the gentrification process (Mercer and Phillips 1981; Chevan 1982; Bratt 1983; Spain and Laska 1984; Law 1988). These factors include nearness to place of work, a preference for older styles of architecture, and savings in inner city housing prices as perceived by potential homeowners (Lang 1982). Another important aspect to those who choose central city locations is the opportunity to live what has been termed as a *cosmopolitan* lifestyle. Although the traditional literature has often undermined the importance of household choices and social factors, the behaviour of homeowners has now been awarded its rightful place in the housing literature. In addition, more research has shown the significance of symbolism in housing (Cooper 1974; Adams 1984). The home is no longer viewed as simply a place of shelter, but as a statement of where individuals feel they fit into society. Adams (1984) states that housing decisions are highly emotional and intensely personal. People purchase homes both to create an image for themselves and as people in societal status positions (Cooper 1974).

An alternative to this view is the belief that households perceive housing as an investment, or a means of keeping pace or keeping ahead of inflation. In this case, the important dimensions for neighbourhood change are housing condition and market perception (Goetze and Colton 1980; Muth 1988; Scott 1988). In terms of market perception, a rising neighbourhood is seen to have a higher demand for housing than the existing supply, while a stable neighbourhood is one where supply and demand balance out. Finally, when there are more available dwellings than

households who are willing to stay, the neighbourhood may be classified as weak (Goetze and Colton 1980).

An additional body of research, although somewhat smaller in scope, deals with another type of revitalization. This process, termed as *incumbent upgrading*, refers to the improvement of housing by established, sometimes low income homeowners. As stated by Bunting (1986), this form of home improvement has often been associated with local community groups who apply political pressures in order to receive funds for improvements both at the household and neighbourhood level (Solomon and Vandell 1982; Johnson 1983; Clay 1983; Clay and Hollister 1983; Smith 1984). In Canada, two federal programs existed to assist in the process. The first is the Neighbourhood Improvement Program (NIP). The main goal of the program was to improve amenities of neighbourhood, housing and living conditions, by providing loans to municipalities for neighbourhood projects (Mercer and Phillips 1981). Another program, the Residential Rehabilitation Assistance Program (RRAP), served a similar purpose, with loans being made available to eligible low income homeowners and landlords in designated areas (Mark and Goldberg 1985). However, the effects of these programs appear to be uncertain, since, in many cases, the results are both widely spread and not easily observable (Mercer and Phillips 1981; Fogarty 1982; Mark and Goldberg 1985; McConney 1985).

Since much of the literature regarding gentrification relies heavily on the American experience, conclusions can be misleading. For example, Australian studies have indicated the existence of a different form of gentrification (Badcock and Cloher 1981; Seek 1983). These studies show a variety of types of housing improvements that, as Bunting (1986) states, "is something beyond maintenance and

stability" (pp. 9), is not yet as obvious as the American examples. However, more recent American research seems to suggest a more modest form of inner city residential upgrading, even when no public money is released (London and Palen 1984; DeGiovanni and Paulson 1985). In comparison to cities in the United States, decline in central Canadian cities has not been as extensive. Perhaps for this reason gentrification in Canada appears to take on a different form than some of the well documented cases, many of which were drawn from American examples. A study by Rose (1984) utilizes the term *marginal gentrification* to describe a population which is constrained economically. These individuals are not able to participate in extensive upgrading, but prefer the benefits of a central city location anyway. This may include university graduates, professional females and the like.

Phipps (1983) relates the idea of atypical gentrification to a medium-sized centre. In his study of Saskatoon, Phipps finds no evidence of large scale gentrification, such as suggested in the traditional literature, and there are few indications of any public funds being used. However, rehabilitation, though modest, is none the less occurring, as the study shows. Hodge (1981) suggests that

> "the pressure on inner city neighbourhoods, in the context of housing shortages, is not a matter of a dilettantish elite seeking a new aesthetic, but of an unsatisfied middle class unable to exercise other options and preferring the locational advantages of the inner city", (pp. 200).

Perhaps, then, this statement, along with studies such as those by Phipps (1983) and Bunting (1986) show this type of modest, sometimes invisible upgrading, to be the typical trend occurring in medium-sized Canadian cities.

THE POTENTIAL AND EXTENT OF GENTRIFICATION

Although the literature regarding gentrification has grown significantly in recent years, it is often difficult to determine the actual extent to which the process occurs. Some scholars believe gentrification to be an important change in residential investment patterns. Others view inner city revitalization to be a "flash-in-the-pan" occurrence or simply "news-media events" (Hodge 1981). Despite these differences of opinion, academics have been successful in generating new theories which attempt to understand where gentrification occurs and why. According to Bunting (1984), single persons and childless couples are more inclined to choose higher density housing types and locations than are other groups in the population. Hence, there are specific reasons for choosing an inner city neighbourhood as a place of residence:

1. an affinity for older housing
2. a desire to be close to the downtown in both the physical and symbolic sense

and, for smaller centres,

3. a perceived savings (purchase price) in housing costs with a greater lot size and space (Bunting 1984).

As a result, migrants move into specific areas within the central city. Clay (1983) states that neighbourhoods which are closest to the Central Business District (one-half to five miles), are more likely to experience gentrification first, and thus, the potential is at its highest there. The reason for this stems from the idea that due to

the general structure of urban centres, the innermost residential areas within a city contain homes which are the oldest and thus possess the most history and character. These houses are usually more architecturally interesting and a result, attract a population which is willing to preserve and nurture them.

At the metropolitan level, Bourne (1981) points out the various characteristics of cities which are most likely to experience the process of gentrification:

1. a historic and attractive central area
2. a high proportion of professional occupations and office jobs
3. a tight housing market
4. older housing which has some architectural merit
5. some inner city amentities (parks, nightlife etc.)
6. absence of racial strife

and,

7. relative difficulties in commuting to suburban locations

Bourne's theory, in its Canadian context, fits nicely into a scheme developed by Lipton (1977). In an examination of twenty Standard Metropolitan Statistical Areas (SMSAs) in the United States, Lipton's results share many similarities. For the most part, cities with centres dominated by white-collar employment and longer commuting distances to the suburbs tend to have strong, high-status cores. On the other hand, cities with strong industrial cores and shorter commuting distances tend to have fewer inner city upper income areas. In addition, some cities may not fit into either category. Lipton's example of Chicago shows that the expansion of

commercial and office space within the central city may lead to a dispersion of inner city neighbourhoods. Accompanied with this situation, a small residential housing supply within the CBD, at least in the Chicago case, has resulted in little potential for gentrification.

In order to substantiate their claims, many scholars in the United States and Canada set out to find concrete evidence of the gentrification process. In keeping with the general trends portrayed in the literature, Hodge (1981) observes movements of people in Seattle. With regard to general migration flows between 1973 to 1978, 15% of all households in Seattle (30,000) moved into the city from outside the SMSA. Seven to 8% (16,000 of households moved to the central city from the suburbs. Thus, in comparison to the national figure of 6.3% (for movement from suburbs to central city), Seattle is slightly higher (Hughes and Sternlieb 1979). Although these figures appear to be significant, especially if the potential for gentrification is considered, Hodge states that they should not be classified as "floods". Rather, migration flows into central Seattle, whether for revitalizing purposes or not, tend to be fairly steady and correspond to flows encountered in previous times.

At the neighbourhood scale, Johnson (1983) introduces the concept of homogeneity among movers into and out of the inner city. A study of 110 homeowners in Grand Rapids, Michigan indicates no significant differences between buyers and sellers. This observation disagrees with the traditional literature in its portrayal of predominantly white, professional people as the typical *gentrifiers*. At the city scale, Johnson states that Grand Rapids has experienced some of the more expected trends within the housing market, namely, 98% well-maintained homes in

1960 to 48% decline in 1973, with a result of 63% revitalization in 1978. A study by DeGiovanni and Paulson (1984) considers selected inner city neighbourhoods in Atlanta and Philadelphia as a focus for gentrification research. In areas consisting of 575 properties in Atlanta, and 1050 properties in Philadelphia, DeGiovanni and Paulson observe the existence of 50% rehabilitation after the beginning of reinvestment in older housing.

With regard to Canadian cities, Weston (1982) illustrates the existence of gentrification by examining its effects. In Ottawa, there has been a loss of approximately 400 moderately priced rental units per year. These were originally intended for use by low to middle income households. In Vancouver, Weston states that the rental vacancy rate has dropped to its lowest in six years, or 0.1%. In addition, the city has been losing properties due to gentrification at a rate of 1,000 units annually. With regard to Toronto, *deconversion*, the process whereby a building is altered from a multi-unit residence to a single unit residence, has resulted in a loss of approximately 5,000 units within a three-year period. In most cases, this has meant that homeowners have eliminated any extra rental units from their properties in favour of more space and reinvestment with revitalizing effects (Weston 1982).

GENTRIFICATION: CANADA VERSUS THE UNITED STATES

As stated earlier, much of the knowledge regarding the process of gentrification has relied heavily on the American perspective. However, in recent

years, academics have begun to realize that the Canadian situation is somewhat different (Mercer 1979; Ley 1981, 1983). These differences can affect the form or type of gentrification as well as the extent to which it may occur. According to Goldberg and Mercer (1986), the Canadian city is much more compact than its American counterpart, and public transit is used much more extensively. Hence, it is quite possible that the potential for gentrification is higher in Canadian cities, since distances are smaller. If distances are smaller, accessibility to services and the workplace may be somewhat easier, and the need or dependency on the automobile may be lessened. In addition, the Canadian urban population has a higher proportion of white individuals than the U.S. city, and a lower degree of racism (Mercer 1979; Goldberg and Mercer 1986). Since the majority of the literature regarding gentrification states that the typical gentrifier comes from the white population, the Canadian potential for the process appears to be significant. With regard to neighbourhood safety, the absence of serious racial strife and the perceived tolerance of elite groups in Canada has served to enhance the desirability of living within the inner city. However, according to Goldberg and Mercer (1986), this situation may not be as predominant in the American city.

A final point concerns urban growth. On the whole, Canadian cities are still growing and seem to be much more stable than the American cities (Goldberg and Mercer 1986). In addition, Canadian inner cities have continued, over the years, to attract and maintain high quality shopping and services, especially within the central city. Hence, it is possible that the overall metropolitan area could be more stable, and thus the deterioration process kept to a minimum in Canada. This leads to the notion of a perceived satisfactory living environment within Canadian central city

neighbourhoods. Furthermore, since inner city decline has been occurring to a lesser degree in Canada than in the United States (McLemore 1974; Ley 1981), it is likely that a potential gentrifying household would find it somewhat easier to decide to participate in the process in Canada. For example, it is much more difficult to enjoy the amenities and the advantages of living downtown if the downtown is suffering from deterioration and neglect. This would lead to a decreased aesthetic value in the CBD and its surrounding residential neighbourhoods. In addition, a central city in decline is likely to require a large amount of incentive and funding in order to revitalize and upgrade inner city commercial and residential sectors. On the other hand, a city which has experienced a smaller amount of deterioration, and has made efforts to maintain the centre and upgrade the necessary problem areas, would likely find it easier to present a desirable living environment to both potential gentrifiers and the general population.

DEMOGRAPHIC CHANGES

Another body of knowledge, although somewhat smaller, emerged in the early 1980s. This type of approach has been termed frequently as the demographic argument. The demographic argument has been considered by a number of scholars including Alonso (1980), Berry (1980), and Rose (1983). These researchers have expressed the need for a better understanding of the broad forces in society which shape the inner city environment. Some of these forces include lower fertility rates, women in the work force, and changes in lifestyle and housing need, to name a few.

Hence, these and other social, economic, and demographic factors produce a particular population with particular needs (Gale 1987). Some of these individuals chose the inner city as a place of residence, and thus became contributors to the process of gentrification.

RECENT STUDIES OF GENTRIFICATION

Much of the research which has emerged in the latter half of the 1980s takes a different approach to studies of gentrification. One of these approaches has been termed the "rent gap". the rent gap can be defined as "the gap between the actual 'capitalized' ground rent (land value) of a plot of land given its present use and the 'potential' ground rent that might be gleaned under a 'higher' and 'better' use (Smith 1987, pp. 462). Some academics believe that rent gaps occur when there is an outward movement of capital to develop suburban, industrial, commercial, recreational, and residential land uses. Thus, less capital is injected into the inner city for maintenance and repair, which then results in a decrease in inner city ground rent levels (Badcock 1984; Smith 1986). Therefore, gentrification and inner city revitalization are viewed as two solutions that would result in a closing of the rent gap (Smith 1986; Knopp 1990).

Another approach to understanding gentrification, which has evolved in the last half of the 1980s is the notion of urban restructuring and the emergence of a new middle class. These ideas, which have strong links to some of the broadly based, theoretical work of the early 1980s (Alonso 1980; Rose 1984), are based on

the assumption that processes like gentrification are the result of a variety of changes that are occurring simultaneously in a modern capitalist society (see Smith 1986, pp. 28-33; Williams 1986). Similarly, Ley (1986) postulates four types of explanation for gentrification. These include demographic change, housing market dynamics, urban amenities, and changes in economic base.

Much of the literature from the mid to late 1980s has stressed the importance of perceiving gentrification as a complex and varied phenomenonm (Beauregard 1986; Williams 1986; Smith 1986; Beauregard 1990; Kerstein 1990). Thus, issues such as the rent gap are only a partial explanation for gentrification (Beauregard 1986; Smith 1987). In addition, the form and extent of gentrification is diverse and may differ greatly between and within cities (Beauregard 1990). Thus, any meaningful study must recognize that gentrification is the result of many interrelated events and processes (Beauregard 1986).

One approach to understanding the complex nature of gentrification which has persisted throughout the early and late 1980s is the notion of a link between women and the process. Researchers like Alonso (1980), Rose (1983), Smith (1987), Rose and Villineuve (1988), Dyck (1989) and Fincher (1990) have suggested that the role of the contemporary female is an important part of the process. Since little work has been undertaken in this area, they have expressed a need for the understanding of the role that women play in the shaping of the inner city and the gentrification process.

CHAPTER III: THEORETICAL FRAMEWORK AND RESEARCH PROCEDURE

INTRODUCTION

The purpose of the study, as stated in Chapter I is to examine the changing form of the inner city and its apparent relation to modern social forces and the gentrification in selected Canadian inner cities. Hence, the main objectives of this chapter are to provide a theoretical framework which takes suggestions from the previous literature, and to define the empirical approach which is used to carry out the study.

The general organization of the following chapter focuses first on a discussion of the theoretical considerations underlying general trends in contemporary urban society. The understanding and context of these trends are essential to the study, since they indicate the possibility of certain important patterns which may be significantly related to the gentrification process. The second focus of the chapter is to attempt to define the study area and the chosen time frame. Third, a brief discussion is included which pertains to the various sources of data, and the variable selection process. Fourth, the various methodological approaches are introduced and defined as a means of being able to handle successfully and interpret the data and its apparent results. Finally, any problems pertaining to the research are briefly discussed.

THEORETICAL CONSIDERATIONS

The previous chapters have identified some of the more traditional views regarding the process of gentrification. However, as implied earlier, although the literature has grown extensively over the years, many gaps exist which serve to question the validity of earlier views of the process. In particular, some academics have pointed out the need to understand more fully the changing patterns of women in the labour force and their effects on lifestyles, family form, and demographic change (Clay 1979; Ley 1980; Rose 1984). This direction of thinking whereby female labour and the processes of societal change are unequivocally linked stems from the basic fact that there have been significant increases in female labour participation rates in recent times (Statistics Canada 1987). The traditional family, where the husband is the primary wage earner, has changed to that of dual careerism, whereby both partners contribute to the well-being of the household (Statistics Canada 1983). In fact, a study by the Ontario Ministry of Community and Social Services (1987) indicates that only 16% of Ontario families fit the traditional model of family form. Similarly, the traditional family constitutes a mere 11% in the United States (Magid 1983), whereas 60% of U.S. families participate in dual careerism (Silverman 1985). Naturally then, it seems plausible that an upswing in female labour power could be seen to affect significantly not only society in general, but the household as well (Ley 1980; Rose 1984). Taken one step further, these effects on the household may very well influence the process and form of gentrification in contemporary cities.

Since the house and the nature of the household can be viewed as a reflection of lifestyle (Adams 1984; Varady 1990), it is perhaps important to have a clear definition of lifestyle in mind. Salomon and Ben-Akiva (1983, pp. 624) define lifestyle as "the pattern of behaviour which conforms to the individual's orientation toward the three major roles: a household member, a worker, and a consumer of leisure, and which conforms to the constrained resources available" (pp. 624). Hence, given that lifestyle can be viewed as such, and that the role of the contemporary working female could be seen as an important, and perhaps essential role in the process, a variety of issues may become relevant. These issues can be related to

1. changes in fertility
2. locational needs
3. the nature of female and family income
4. education levels

and,

5. changes in the demand for housing.

During the 1950s and 1960s academics began to observe a decrease in fertility within the Canadian and American population. These rates decreased even further in the 1970s (Alonso 1982). This change was largely due to the fact that more females were going to work and pursuing careers (Beauregard 1986; Rose and Villineuve 1988; Dyck 1989; Fincher 1990). Naturally then, if both partners in the household choose to pursue a career, it seems logical that less time is available for

staying at home and tending to various domestic chores. Since contemporary women still assume responsibility for the majority of domestic chores and therefore have less time to spend in the home when pursuing a career, a trend may be created which could result in a female desire to delay childbirth, and lessen the number of children per family. Thus, a greater emphasis is placed on careerism, rather than familism. This new change in female lifestyle would allow women to increase their power in the household and society as a whole.

The achievement of increased female power implies that female choices and needs could be more important in modern society than in the past (Rose and Villineuve 1988). If the amount of time spent in the home is lessened due to career obligations, closeness to services and workplace is likely to be essential. This is perhaps more important for women than for men, and thus the choice of location is probably much more restricted in dual career households, than in traditional ones. A possible result is that working women become an integral part of the decision-making process, especially when considering housing type and location, and the traditional view of following the husband to a new job could be less important in modern society than in the past. However, this still remains an open research question.

An increase in the number of working females in contemporary society not only appears to influence fertility but also seems to affect income. When both partners in the household choose to pursue a career, the result is a change from a one to a two income household. Hence, both female and family incomes are increased. This not only would allow females to achieve economic independence but would also allow the individuals in the household to invest a larger portion of

earnings on leisure activities. This could result in more time spent on leisure than on child-rearing.

Since more individuals are becoming career-oriented, competition for higher status occupations is vigorous (Law 1988). This, of course, affects both men and women in the labour force. For this reason, it is probable that higher proportions of men and women are attaining university degrees in recent times, as reflected in several studies (Frenette 1978; Clay 1983; Gale 1983; Ley 1983; Bunting 1984, 1986; Spain and Laska 1984; Ray 1985; Beauregard 1986; Gale 1987).

In addition, it is possible to theorize that while seeking a university education many students become exposed to inner city living. This is largely due to the fact that many universities are located within the central city. Thus, restrained budgets and low proportions of student car owners could then allow housing in or near the Central Business District to be the logical choice for many individuals. One result is that over time such a group could come to enjoy the amenities and excitement of downtown living, and thus would be more likely to carry on this lifestyle and re-invest in the housing stock after the degree has been achieved. This could also imply a formation of new households since fewer children may be staying at home with parents than in the past (Weston 1982).

At this point, increases in female labour participation have been linked to changes in fertility, family incomes, and education levels. However, the existence of large numbers of working females is likely to have a significant influence on the demand for housing, especially in the inner city. As stated earlier, career pressures may heighten the need for closeness to services and workplace, and may restrict locational choices (Varady 1990). Thus, many households could find central city

housing to be an obvious locational advantage, since many higher status occupations are located within the Central Business District (Lipton 1977; Law 1988). The majority of amenities and entertainment opportunities are also found in the CBD, hence, those households who would spend a large portion of their salaries on some form of leisure activity might also find an inner city home to be advantageous (Lang 1982).

This leads to the notion of a formation of new households in the inner city. One result of these formations is the "undoubling effect". The undoubling effect occurs when smaller numbers of individuals inhabit inner city homes (Gale 1987). Hence, multi-family housing is less common in the central city than it was in the past. Thus, it is probable that the demand for housing, especially in central city neighbourhoods, has changed. Single people living alone, single parent households, unrelated persons living together, married couples with one child, and increased divorce rates, as well as the changes in moral attitudes which have led to these lifestyles, likely serve to enhance the process and heighten the demand for adequate housing.

Hence, recent trends, especially those pertaining to women, may act as a catalyst of some important structural changes in contemporary cities. The days of women remaining home and raising large families appear to belong to the past. However, even though the modern family can likely excercise better options for themselves, especially when choosing the type and location of the potential home, restrictions may be increased. This stems from the notion that when both household partners pursue careers and have economic independence, the preferences of each person becomes important. Hence, for this reason, female choices could be

extremely critical since closeness to services and workplace is likely to be more essential for her than for her husband (Rose and Villineuve 1988). Thus, it may be even more difficult to choose a location, since locational decisions are probably more complicated in modern society than in the past.

SUMMARY OF RESEARCH GOALS

To summarize, there are two bodies of research which are of interest to this thesis. The first body is quite extensive, and has been concerned mainly with the description of gentrification and the characteristics of a gentrifying population (Frenette 1978; Black 1980; Spain 1980; Bourne 1981; Hodge 1981; Holcomb and Beauregard 1981; Ley 1981, 1983; Weston 1982; Gale 1983; London and Palen 1983; Bunting 1984; Gale 1984; Bunting 1986). The second body of research is concerned with the overall forces which may have given rise to a population which is interested in moving to the inner city (Alonso 1980; Berry 1980; Rose 1983; Holcomb 1984; Beauregard 1986; Ley 1986; Smith 1986; Williams 1986; Gale 1987; Smith 1987; Rose and Villineuve 1988; Dyck 1989; Beauregard 1990; Fincher 1990; Kerstein 1990; Varady 1990). This research also emphasizes the importance of the contemporary woman in the process of change in the inner city.

Thus, the research goals for this thesis are as follows. The first goal is to discover whether there is any evidence to suggest that the demographic/societal changes discussed earlier in this chapter may affect process of gentrification. The second goal involves a comparison of changes in a set of typical gentrifying variables

between core neighbourhoods and other areas to determine whether these variables are exclusive to the inner city or whether they reflect general trends in society. The variables include a young population, generally age 25-34, few or no children per family, high levels of education, and employment in white collar or professional occupations. Thus, if the results indicate that over time, such a population is either increasing or is stronger in core neighbourhoods than other areas in the city, then this would indicate that the various demographic/societal forces discussed in this thesis are more prevalent and unique in the inner city. If this is true, then it is possible that these are indicative of gentrification. If this is not true, then it is likely that demographic and societal factors are a product of society itself, and are thus not limited to central city areas or the process of gentrification.

RESEARCH PROCEDURE

The approach adopted in the study is to analyse the progression of change of certain specified variables over a fifteen year period in selected Canadian core neighbourhoods, to determine if a link can be made between the theory explained above and the process of gentrification. It is through the examination of this progression that inferences pertaining to any underlying forces of change can be made.

DEFINITION OF VARIABLES AND EXPLANATION

The purpose of this section is to introduce the selected variables that are utilized in the research, and to provide explanation for the ones which require further clarification. These variables (collected at the census tract level), have been selected as they relate to the two research goals described in the previous section, and are grouped together as they represent the various characteristics of gentrification, as well as the theory defined in this thesis. Therefore, the variables which relate to the first research goal are listed under the groupings for young age group, small family size, high level of education, employment in professional occupations, increased female and family incomes, and changes in the demand for housing. The variables which pertain to the second research goal are listed under the groupings for high level of education, presence of working women, employment in professional occupations, and increased female and family incomes. In addition, it should be noted that the following variables, listed below, are to be represented by the collected census tract data for the selected study areas, and are defined as such:

Young Age Group

MALES total males age 25 to 34
FEMALES total females age 25 to 34

Small Household Sizes

NOCHILD total families with no children
CHILD1 total families with 1 child
CHILD2 total families with 2 children

High Levels of Education

UDEGREE total population with university degree

Presence of Working Females

FPRATE female labour participation rate

Employment in Professional Occupations

MMAN	male occupations, managerial, administrative and related
MTEACH	male occupations, teaching and related
MMED	male occupations, medicine and health
MTECH	male occupations, technological, social, religious, artisic and related
FMAN	female occupations, managerial, administrative, and related
FTEACH	female occupations, teaching and related
FMED	female occupations, medicine and health
FTECH	female occupations, technological, social, religious, artistic and related

Increased Female and Family Incomes

MMEDINC	male median income
FMEDINC	female median income
MEDFINC	median family income

Changes in the Demand for Housing

VALDWELL	value of dwelling
TOTALO	total number of owned dwellings
TOTALR	total number of rented dwellings

It should be noted, however, that these variables will be listed as they have been classified in the 1986 census by Statistics Canada. The reason for this stems from the fact that certain variables have been categorized differently from one census to the next. For example, the 1971 census places those with university degrees into two categories, which are specified as having no training, or some

training. This "training" refers to any prior education which was obtained at a non-university institution. On the other hand, the 1976 census classifies degrees by gender, and the 1981 and 1986 censuses simply group people who have achieved degrees into one category.

In accordance with the above list, some variables may require further clarification. Firstly, the 25 to 34 age group is chosen as a gentrifying variable since it is likely that this is the prime age for first time home purchases, whereas older groups are more likely to be established already. Secondly, the chosen occupational groups have been included because they tend to correspond to the "professional" or "white collar" occupations linked with the gentrification process (Lipton 1977; Weston 1982; Ley 1983). Thirdly, the female labour force participation rate variable has been defined in Statistics Canada Census Publications as the number of employed females 15 years of age and over taken as a percentage of the labour force. Finally, the research makes use of median incomes simply because this measure of central tendency is consistently included in the censuses, whereas, other measures, such as the arithmetic mean, are not.

DEFINITION OF THE STUDY AREA

As mentioned above, the focus of the research has been placed on the Canadian inner city. In order to be able to obtain a clearer understanding of the progression of change, it seems logical to select Canadian centres which fulfill some preliminary criteria. These criteria are size and location (Lipton 1977).

With regard to size (both in population and areal extent), it is appropriate to select centres large enough to support a population of would be gentrifiers. In addition, distances must be sufficient to make the Central Business District and its surrounding neighbourhoods attractive to a potential gentrifying population. Further, the inner city must be extensive enough to offer an adequate supply of good quality housing stock. If these standards are not met, it is very likely that potential gentrifiers will find peripheral areas to be more appealing.

With regard to location as a selection criterion, it seems logical that in order to observe the progression of change in the Canadian context, it is essential to choose centres which are dispersed geographically across the country. This would allow a more general picture to be seen, than if all centres were located in one region.

In keeping with the criteria explained above and the assumption that the largest centres are most likely to experience gentrification (Lipton 1977, Filion 1987), the research focuses on four Canadian metropolitan areas with populations in excess of 500,000. Montreal and Toronto are chosen to represent French and Central Canada, while Vancouver represents the West. In addition, Winnipeg has been included in the study to exemplify patterns in the Canadian Prairie Region.

TIME FRAME

The study period centres on patterns of change in the Canadian inner city over a fifteen year period from 1971 to 1986. Since it is generally agreed that the

gentrification process began sometime in the early 1970s, this time frame seems reasonable (Lipton 1977; Clay 1980; Long 1980).

DATA SOURCES

Although it is aknowledged that a variety of sources exist and have been used over time in studies pertaining to gentrification, many are both expensive and time consuming to collect. Thus, with the given resources and time constraints imposed on this research, the primary sources of data come from Statistics Canada Census Publications for the years 1971, 1976, 1981, and 1986. The basic unit of measurement is the census tract. The census tract is the areal unit used extensively in studies regarding the process of gentrification (Maher 1974; Lipton 1977; Hodge 1981; Ley 1981, 1983; Clark 1985; Bunting 1986; Filion 1987; Bourne 1990). It is a relatively small area which usually contains a limited number of neighbourhoods.

In terms of this thesis, there are three main reasons for utilizing census tract information. The first reason is that Statistics Canada provides a good breakdown of data at this level. In addition, the data is quite detailed, and thus it is relatively easy to select variables for analysis directly from the census. The second reason stems from the fact that since census tracts are small in size, it is easy to define an area which can be termed as "inner city" in accordance with the size and distance criteria of the study. Further, census tract data allows the researcher to delimit the boundaries of the study area more precisely than if larger census areas are used.

Finally, data at the census tract level is easily attainable, both in the United States and Canada, and is relatively inexpensive to obtain.

DATA COLLECTION

In many studies pertaining to gentrification, it is helpful to define what is to be considered as "inner city" and what is not (McLemore 1974; Clay 1983; Filion 1987). For the purpose of this research, the inner city is defined as the areas surrounding the Central Business District where, as stated by Filion (1987, pp.225) the attraction to amenities "is most strongly felt". Thus, the area incorporates fairly small distances. Although the research on gentrification may differ, the inner city is usually defined as a radial distance from a specified centre point. This has been accomplished by using a 0.5 to 8 km area (Clay 1983), or a 3 km radius (Filion 1987). The reason for using these distances relies on the philosophy that this area is closest to the workplace and downtown amenities, contains the oldest and most architecturally interesting homes, and is withing a reasonable walking distance. Thus, in terms of this thesis, a 3 km radius around the most central intersection in the CBD is used for the cities of Montreal, Toronto, and Vancouver. Since, in the case of Winnipeg, the central city is significantly smaller than that of the other selected centres, this radius has been adjusted to 2 km. At this point it should be noted that if any natural boundaries, such as water or large sections of non-residential land, interrupt the radius at any point, these areas are not included. For the purpose of this study, only Toronto and Winnipeg have uninterrupted radii, as

both Montreal and Vancouver are affected by natural boundaries such as coastlines near the inner city. With regard to individual census tracts, all tracts which fall completely within the boundaries of the radius, are included in the sample. In addition, if at least one half of a particular census tract lies within the boundary, it is also added to the sample. Thus, the study includes 60 census tracts for Montreal, 49 for Toronto, 14 for Winnipeg, and 18 for Vancouver.

METHODS OF DATA ANALYSIS

The analysis has been divided into three sections. The first section focuses on a preliminary examination of patterns of change of the chosen variables in each centre over the given time frame. This is accomplished through the inspection of the arithmetic means and the calculation of growth coefficients (rates of change) between 1971 and 1986. If, over time, the selected variables, which are characteristic of gentrification, tend to be on the increase, then it is very likely that the process is occurring in the city under examination. The growth coefficients are computed for each variable by subtracting the mean 1971 value from the mean 1986 value and then dividing by the mean 1971 value, using the inner city census tracts as spatial units. In order to obtain a percentage, this value is then multiplied by 100. The purpose of utilizing growth coefficients is to observe the amount of change that occurs over time and to compare the changes between specified variables.

Figure 1: Selected Census Tracts, Montreal (Source: Statistics Canada, 1986).

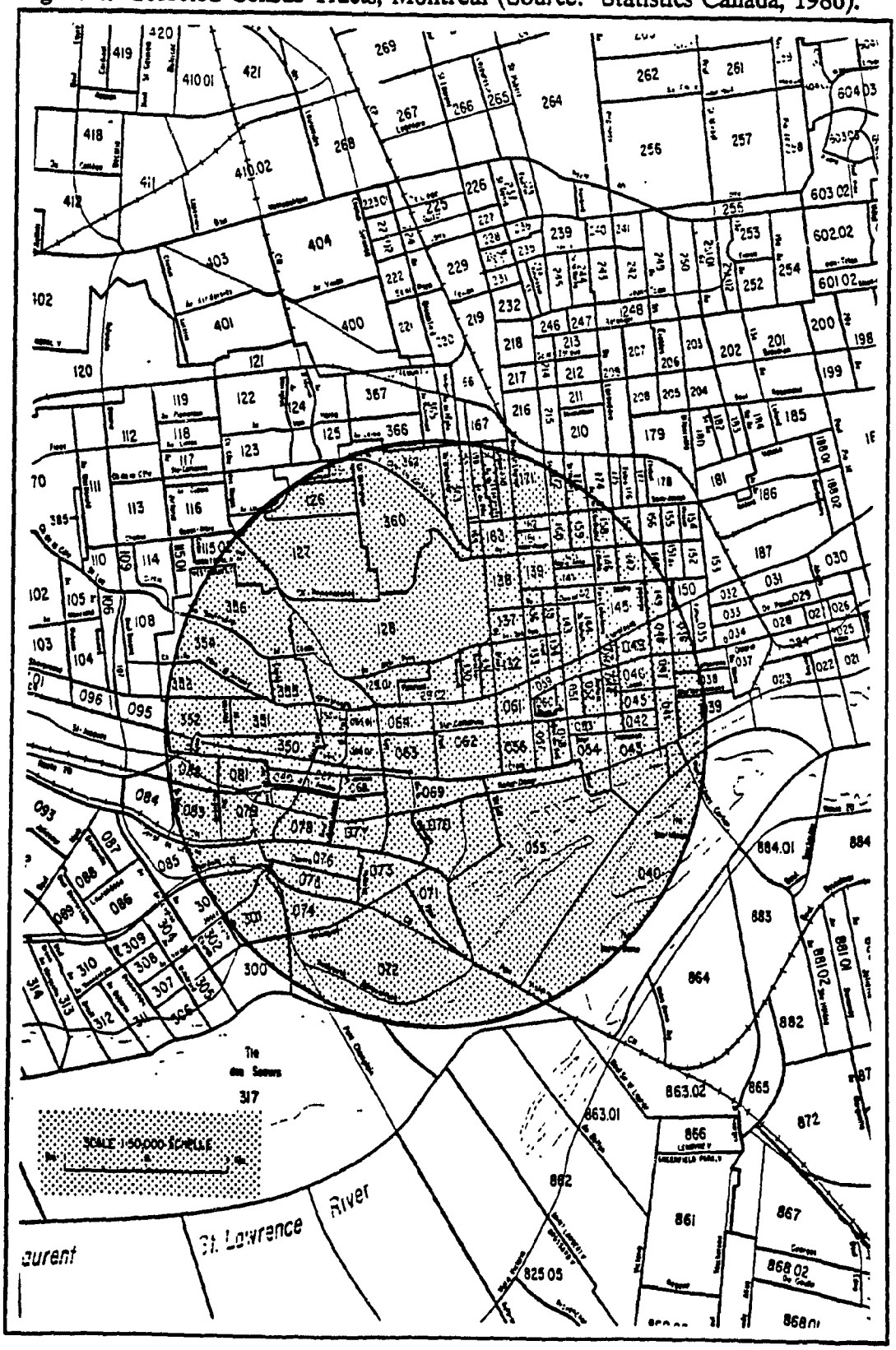


Figure 2: Selected Census Tracts, Toronto (Source: Statistics Canada, 1986).

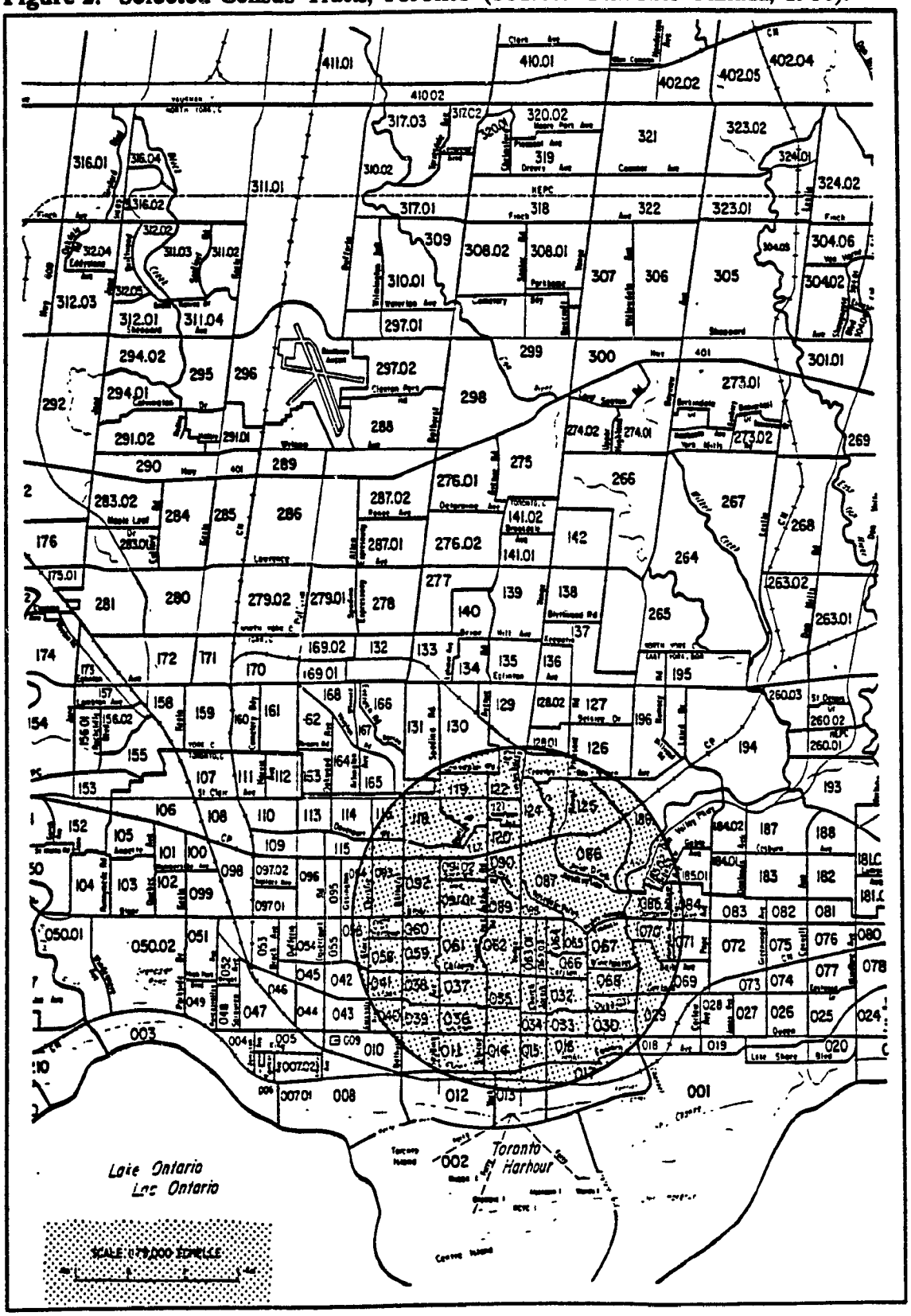


Figure 3: Selected Census Tracts, Vancouver (Source: Statistics Canada, 1986).

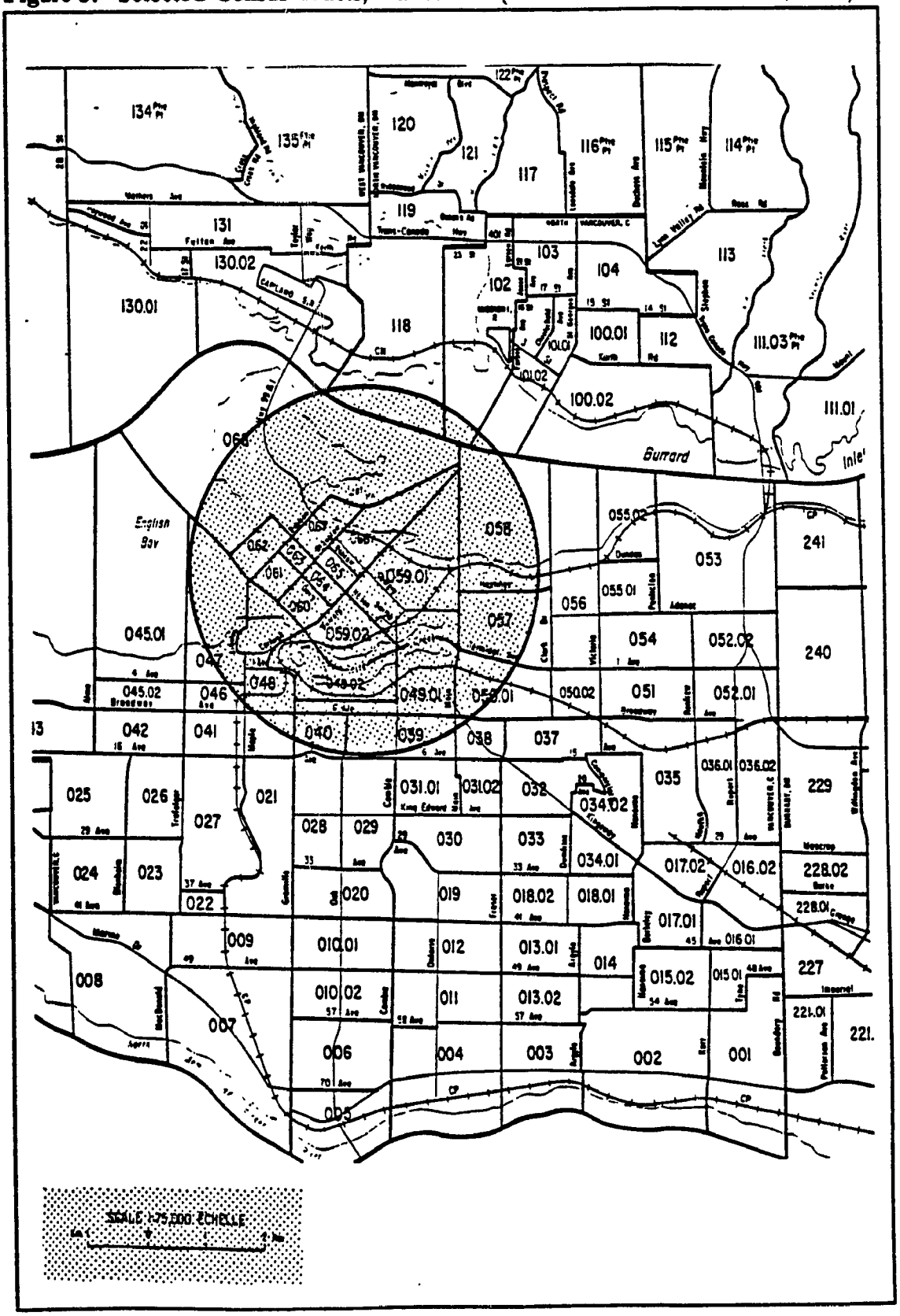
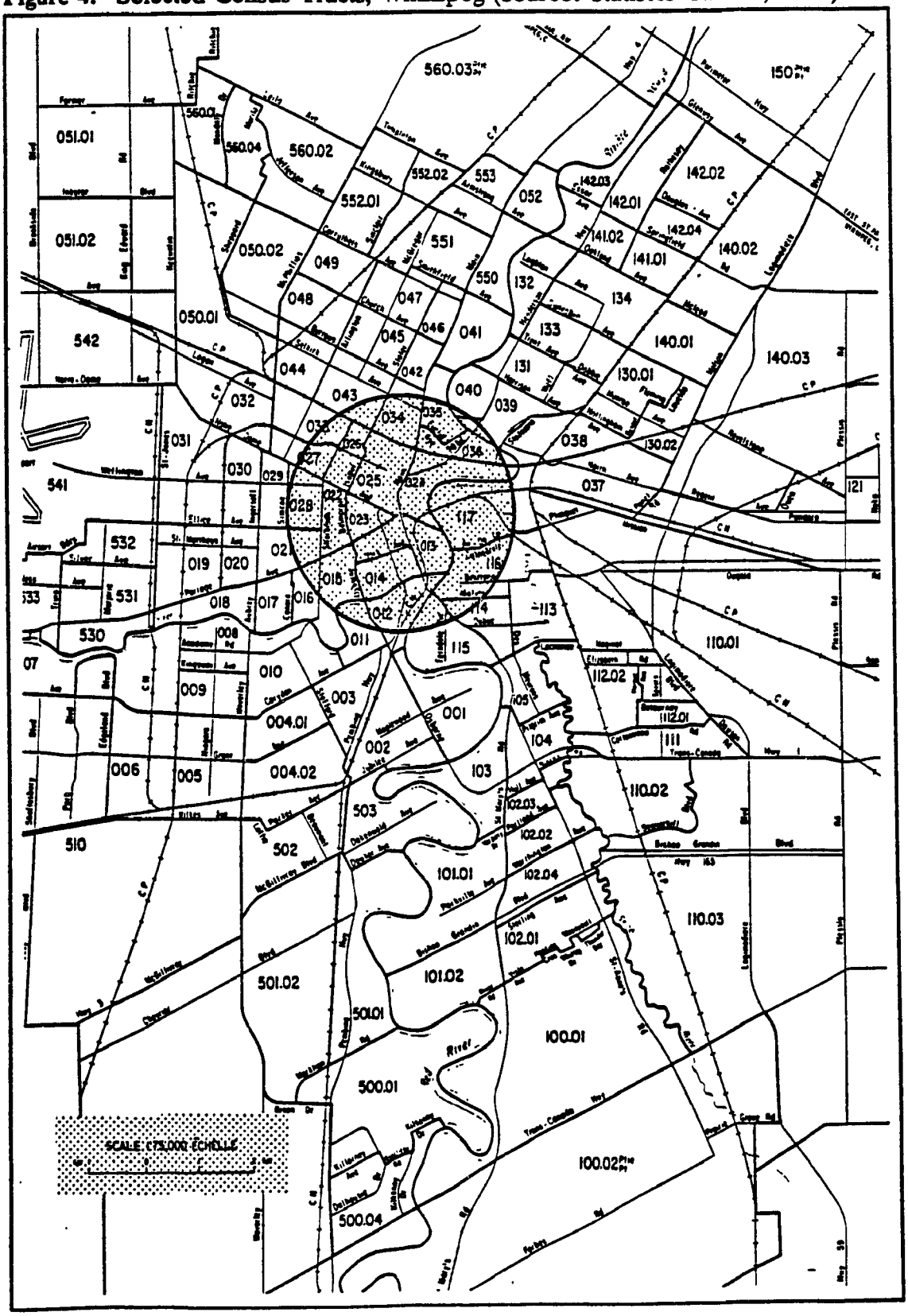


Figure 4: Selected Census Tracts, Winnipeg (Source: Statistcs Canada, 1986).



The rate of change in selected core neighbourhoods is an absolute measure, in the sense that it does not identify changes relative to the rest of the city. For this reason, the second section deals with the calculation of location quotients. Location quotients have often been used by economic geographers (Wheeler and Muller 1981). For this thesis, location quotients are computed as follows. Let X be a variable such as the number of people with university degrees. Consider two areas S and A, where S is a subarea of A. Then let

X_S - the value of X over area S, and
X_A - the value of X over area A, and
$X_A \geq X_S$.

A location quotient for X is then defined as:

$$LQ(X) = (X_S/P_S) \,/\, (X_A/P_A)$$

where P_S is the total population in area S, and
P_A is the total population in area A, and
$P_A \geq P_S$, $X_{A,S} \in P_{A,S}$.

If the concentration of variable X is different in the two areas (i.e. $(X_S/P_S) \neq (X_A/P_A)$), then the resulting location quotient has a value of less than or greater than *one*. In other words, a value for LQ(X) of *one* can only arise if subarea S has exactly the same concentration (or density) of variable X that area A has. Otherwise, a value of less than *one* indicates a weaker concentration of a specified variable in S than in the A. A value greater than *one* indicates the opposite.

For the purpose of this thesis, location quotients are used to see if the inner city is different from what can be termed the outer city, and the CMA. Here, the outer city is defined as the area, termed by Statistics Canada (1986) as the city, minus the census tracts identified by the sampling radius. Thus, two sets of location

quotients are utilized. The first set of location quotients employs a selected number of *gentrifying variables* and calculates values of concentration between selected core neighbourhoods and the Census Metropolitan Area (CMA) as a whole. In addition, quotients are computed for each city and census year. The second set of location quotients implements the same procedure, with the exception that the *outer city* is used as the comparative region instead of the *CMA*. Therefore, if a particular quotient yields a value of greater than one for a particular variable, this indicates a greater concentration in the core neighbourhoods as opposed to the rest of the city or the CMA. Thus, if a group of variables linked with the process of gentrification is examined, and if the resulting quotients yield values of a higher core neighbourhood concentration, then it is likely that gentrification is present. Further, when these quotients are computed for each city and census year, important spatial comparisons can then be made over time. Since some variables may be more meaningful in the analysis of location quotients than others, due to the conceptual meaning of their quotient values, the following variables, which are consistent with the gentrification definition, have been chosen. These include MALES, FEMALES, NOCHILD, CHILD1, CHILD2, FPRATE, UDEGREE, TOTAL0, TOTALR, and the eight variables which represent professional occupations.

The third and final part of the analysis deals with the examination of individual location quotients for each census tract, and the identification of outliers. In the context of this thesis, an outlier is a census tract which contains a concentration of a variable which can be defined as extreme. It is through this process that a more detailed study of the inner city can be gained. In addition, the analysis of individual location quotients and their respective outliers allows the

researcher to determine which tracts are likely to be candidates for gentrification or a gentrifying population.

After calculating location quotients for each census tract, and using the same variables as those in the second section of the analysis, Standard Deviation values can be computed to determine the spread of the data about the mean of the location quotients for each variable. It is through standard deviations that extreme cases, or outliers can be identified. In order to be able to determine which census tracts can be defined as extreme, upper and lower boundaries must be set. Frequently, one or two standard deviations from the mean are used to delimit outliers. However, this study is complicated by the fact that there are large differences between the number of existing census tracts for each centre. Consequently, one standard deviation from the mean yields too many outliers for a city as large as Montreal (19), and two standard deviations yields virtually no outliers for a smaller centre like Winnipeg. A reasonable compromise is the choice of 1.4 standard deviations from the mean, which includes approximately 84% of the census tracts considered as 'typical' cases. Moreover, by using 1.4 standard deviations, one can expect approximately 10 outliers for Montreal, 8 for Toronto, 3 for Vancouver, and approximately 2 outliers for Winnipeg.

The upper and lower boundaries, which are used to identify potential outliers, are calculated by multiplying the value of one standard deviation for the location quotients of each variable by 1.4 and then adding the mean to delimit the upper boundary and subtracting the mean to delimit the lower boundary. Thus, any census tract which falls outside either of these boundaries is then defined as an outlier. In addition, outliers which fall below the lower boundary and have extremely low

concentrations of a specified variable are termed 'negative outliers'. Census tracts above the upper boundary and have extremely high concentrations are termed 'positive outliers'.

PROBLEMS OF THE RESEARCH

It is not uncommon for geographers to find that certain problems may exist in their research, especially when dealing with social data. These problems are varied, and may or may not affect the results significantly. However, it should be noted that this depends entirely on the components of the individual research itself. In the following study, existing problems are twofold. The first problem concerns *missing values*. These values are simply excluded from the census publications, and thus are not available for collection or analysis. Unfortunately, this is a situation which presents itself frequently to those who make use of census data. Generally, the missing values, which are highlighted in the appendix, pertain to female occupational groups and the number of children per family. Some values for median incomes are also absent, but these are not as widespread. However, it should be emphasized that although the overall results are not likely to be severely affected, some of the individual variables, especially the female-related ones, may not be as important as could perhaps be expected.

The second problem relates to apparent errors in the census publication where the data were taken from. Although it is impossible to determine how these errors occurred, it is very likely that they stem from problems which originated

during the collection of the census or at the level of initial data entry by the census. Unfortunately, these errors can influence the overall patterns of change in the study areas, and must be overlooked when interpreting the research findings. There are two variables which are adversely affected. The first variable is UDEGREE (Montreal 1976), where drastic increases and decreases appear between 1971 and 1981. This is contrary to the general nature of social data. The second affected variable is B1946 (Vancouver 1986), where increases are seen in the number of dwellings built before 1946. This, of course, is an impossible finding. These discrepancies are also highlighted in the results.

CHAPTER IV: RESEARCH FINDINGS

INTRODUCTION

The purpose of this chapter is to discuss and interpret the results of the study for the four selected urban centres (Montreal, Toronto, Vancouver, and Winnipeg), over the given time period (1971 to 1986). The results, which are discussed according to the variable groups presented in Chapter 3, are twofold. First, in the consideration of the arithmetic means of the census tracts, three sets of growth coefficients have been computed. These coefficients, which are based on 60 census tracts for Montreal, 49 for Toronto, 14 for Winnipeg, and 18 for Vancouver (pp. 40), are used to examine the rates of change over the fifteen year period. The first set of growth coefficients (GROWCT) pertains to the inner city study area. The second set (GROWCITY) includes the remainder of the city, or outer city. Finally, the third set of coefficients (GROWCMA) includes the remaining areas in the CMA. The actual values for the means and growth coefficients (Tables 1 to 4) can be found at the end of the chapter. In addition, several figures, which illustrate the mean values for the variables, have been included in this chapter. These figures serve to enhance the discussion of the results, and show the changes that each centre has experienced over time in relation to its inner city.

In addition to the growth coefficients, two sets of location quotients (explained in Chapter 3) have been computed for each city from 1971 to 1986 (see end of chapter). *LQCITY* represents the distribution of a particular variable in the

inner city relative to the city, and *LQCMA* represents the inner city relative to the CMA. Further, several figures have been included which illustrate the changing concentrations of the selected variables over time. These figures represent the location quotient values for the inner city relative to the CMA. The reason for this choice stems from the fact that, although there are two sets of quotients for each centre, the patterns are very similar. Thus, two sets of figures would be repetitive. Moreover, since the CMA includes that area which has been defined as outer city, it seems reasonable to select the inner city/CMA values for graphic representation.

Finally, a third set of location quotients, calculated for each census tract, are used for a more in depth look at the core neighbourhoods themselves. These quotients, comparing concentrations of core neighbourhoods relative to the CMA, are essential for the identification of extreme cases, or outliers. This process has been described in the previous chapter. In addition, maps are included which show the spatial configuration of some of the outliers. These outliers, with extremely high concentrations of the specified variables are shown for each centre and each year. Since some census tracts contain more than one variable considered as extreme, these outliers have been classified into three groups. Thus, census tracts are illustrated on the basis of whether they contain 1 to 3 outliers, 4 to 6 outliers, or greater than 6 outliers for the specified variables. The purpose of these maps is to summarize the research findings discussed in this chapter.

DISCUSSION AND INTERPRETATION OF RESULTS

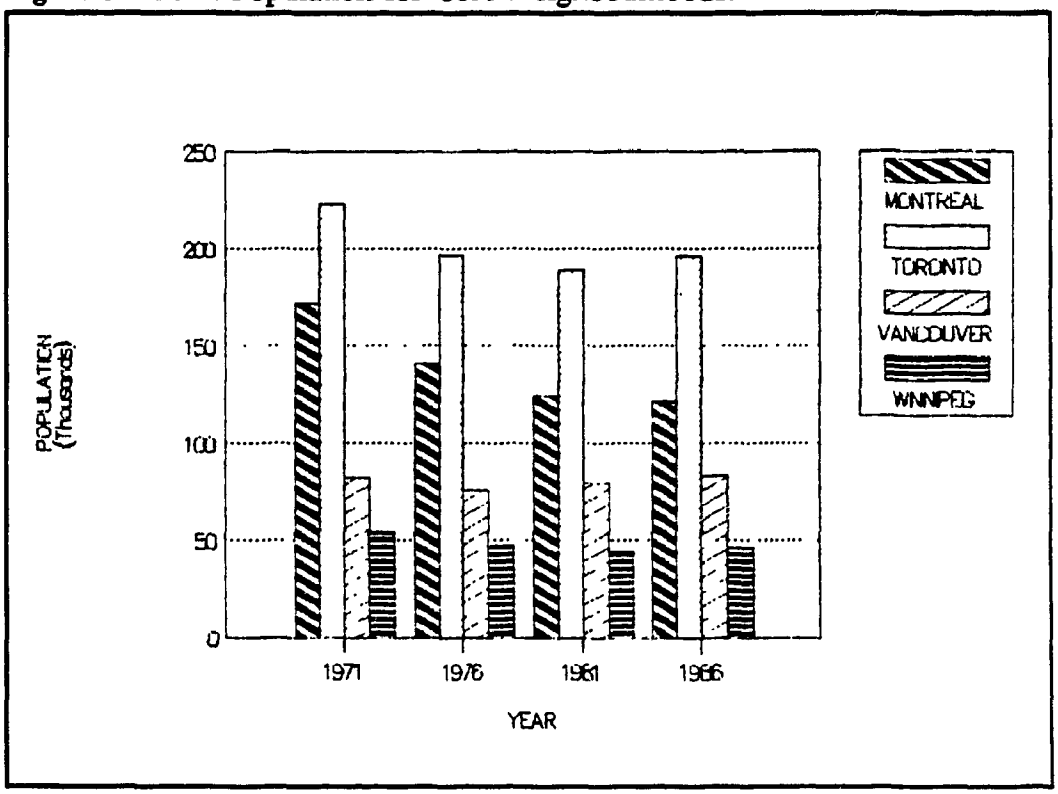
POPULATION AND YOUNG AGE GROUP

The values for the means for this group, which include POP, MALES, and FEMALES can be seen in Figures 1 to 3. Upon close inspection of the growth coefficients it can be shown that the overall population within the core neighbouyhoods of Montreal, has declined 33% between 1971 and 1986 (see Table 1). Similarly, the outer city has declined 14.2%, while the CMA has grown by 24.7%. Although the actual values differ between cities, this general decline in the population of core neighbourhoods is consistent in all centres. However, between 1981 and 1986, core neighbourhoods appear to be either gaining or levelling off with regard to their population.

With regard to the analysis of the growth coefficients, it becomes apparentthat although some differences exist between Montreal, Toronto, Vancouver, and Winnipeg, there are some general trends which seem to have emerged in the past fifteen years. One trend which is common to all cities is the steady decline in the population of core neighbourhoods. This decline is due to a number of factors, some of which

include the process of suburbanization, where processes like the "undoubling effect" of inner city housing, and the movement of immigrant groups to peripheries as a result of economic and social advancement, are important contributors. In addition,

Figure 5: Total Population for Core Neighbourhoods.



the expansion of office and commercial land uses in core areas pushed some of the population to other areas. Another important factor for population decline is the overall decrease in household size within core neighbourhoods, and thus less people are occupying the available housing stock. This factor is supported by Statistics Canada Census Publications for the years 1971, 1976, 1981, and 1986. A final point, however, re-establishes the fact that since 1981, most inner city populations have either stabilized or are increasing.

With regard to males and females in the 25-34 age group, it is clear that both groups have increased their numbers in core neighbourhoods. This trend is consistent in Vancouver and Winnipeg but in Montreal and Toronto minimal changes have occurred. Moreover, the results for the growth coefficients seem to

suggest that females in this age group are increasing at a faster rate than males (see Tables 1 to 4). In Toronto, this rate is six times greater in core neighbourhoods.

In terms of the location quotients, the concentration of young males is slightly higher in core neighbourhoods when compared to the outer city and CMA, and the trend is either steady or increasing over time in the four centres. Also, this pattern is similar when comparing the inner and outer city (see Tables 5 to 12). However, in the case of young females, the quotient values are very close to 1, with the exception of Vancouver. Thus, it appears that young women are distributed fairly evenly throughout core neighbourhoods, outer city, and CMA.

Thus, one trend which emerges in the four centres is the higher concentration of young men in core neighbourhoods than young women. Also, with the exception of tracts in Vancouver, where both concentrations are high, it seems that men are less evenly dispersed than women. However, the fifteen year time period yields no dramatic changes overall, and thus, the link between women in the 25-34 age group and gentrification is not getting stronger over time. In addition, where home purchases are concerned, the relative stability of core neighbourhoods, although not suggesting decline, does not appear to be more attractive in 1986 as it was in 1971. Hence, an increased demand for inner city housing by this age group, and by young women is not apparent. Moreover, this finding is contrary to the implications of the theory discussed in this thesis.

Figure 6: Mean Values for Core Neighbourhoods, Males Age 25 - 34.

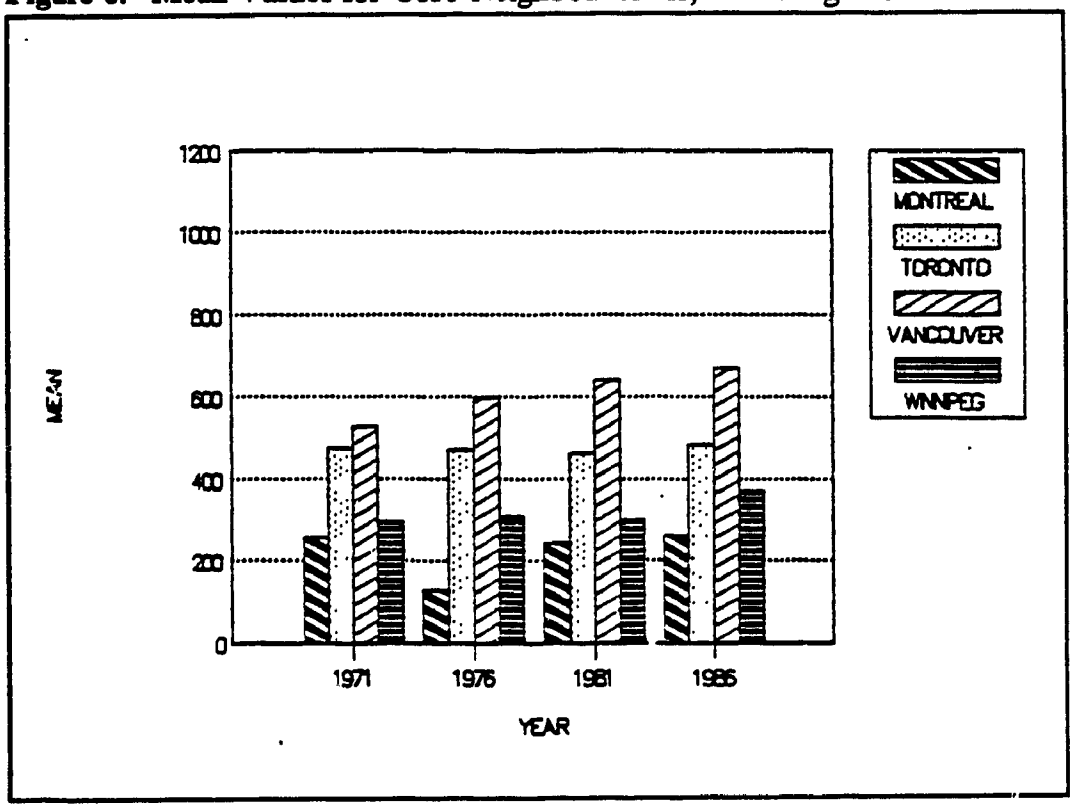


Figure 7: Mean Values for Core Neighbourhoods, Females Age 25 - 34.

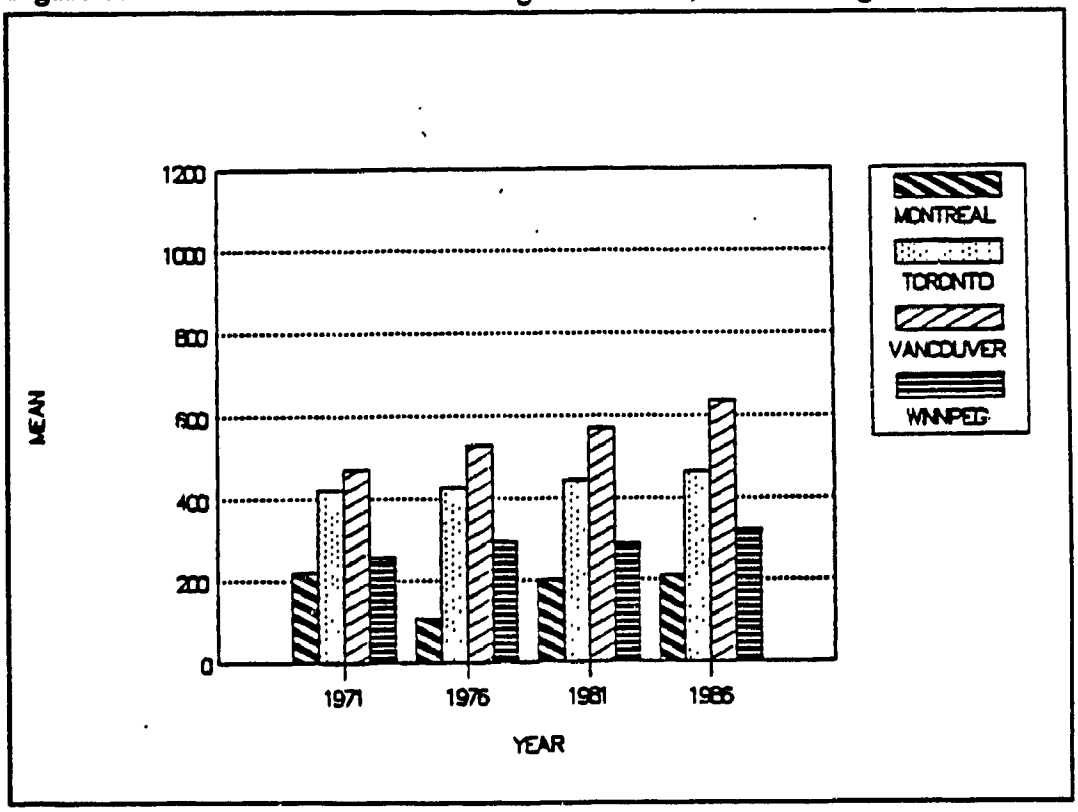


Figure 8: LQ's for Core Neighbourhoods, Males Age 25 - 34.

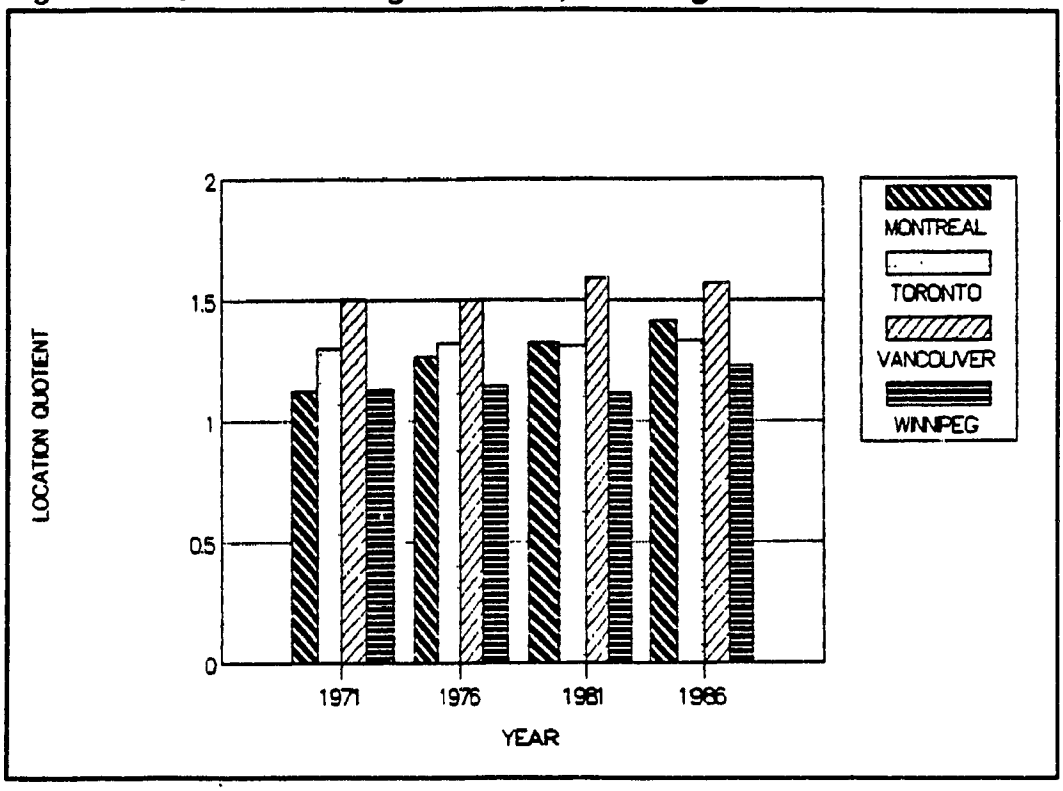
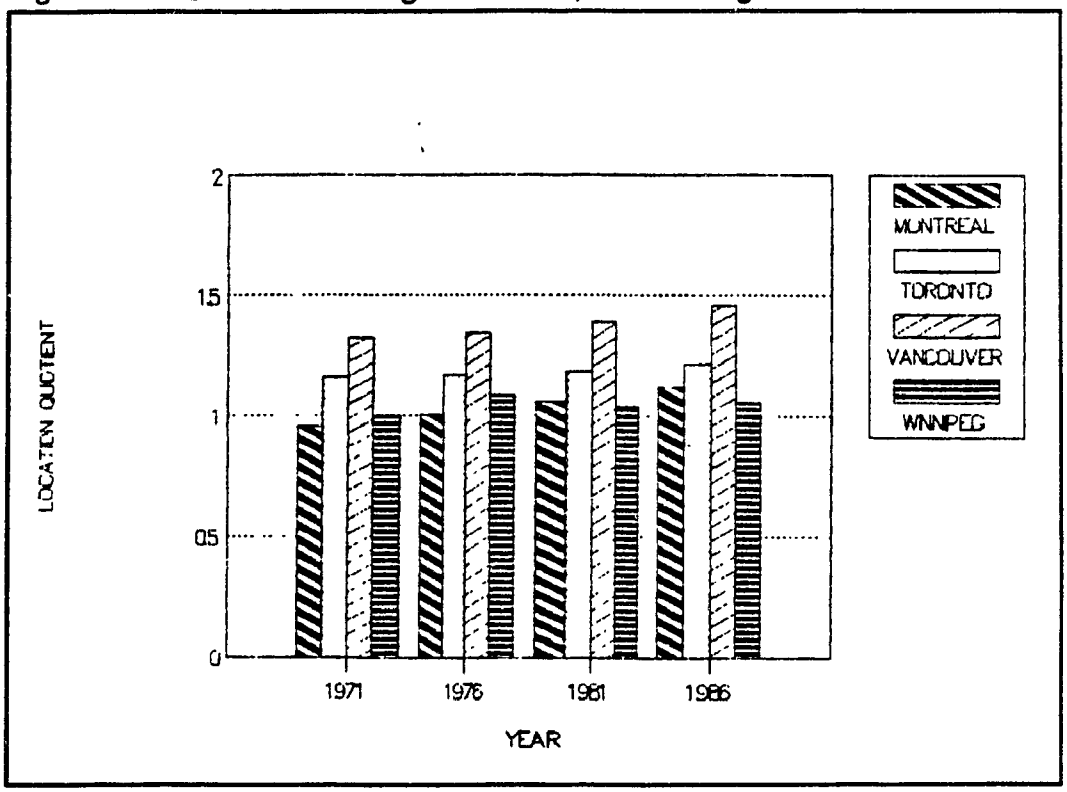


Figure 9: LQ's for Core Neighbourhoods, Females Age 25 - 34.



OUTLIERS: YOUNG AGE GROUP

The values of the location quotients for each census tract and their standard deviations can be seen in Tables 13 to 28. When the incidence of young males and females is examined by individual census tract, spatial variations can be identified. In the case of Montreal, young males and females do not vary greatly overall, although young males seem to vary more than young females. In addition, although the majority of tracts show a relatively even distribution of young males and females in core neighbourhoods, extremes cases, or outliers do exist. In general, between 1971 and 1981, there are more positive outliers than negative outliers. Thus, most of the outliers contain an extremely high concentration of young males and females. However, it should be noted that over time, the number of negative outliers is increasing. Also, the number of positive outliers is decreasing to a point where, by 1986, there is a relatively equal split. This trend is likely the result of less tracts being available for residential use (and possibly gentrification) over time by the invasion of other land uses, as well as the rapid growth of more peripheral areas in the CMA. In terms of the actual quotient values for the outliers (see Tables 13 to 16), most tend to fluctuate up and down and neither strengthen or weaken over time. A final point concerns the location of extreme cases. Although there are a few differences, the majority of positive outliers can be found in tracts adjacent to the CBD. These include Tracts 61 to 66 to the east and west, and Tracts 127 to 132 to the north (see Fig. 1). The negative outliers are located in tracts to the south of the inner city (Tracts 53 to 57, 60, 68, 77, and 78).

In the case of Toronto (Tables 17 to 20), young females do not show a high variation between census tracts, whereas young males do vary, especially between 1981 and 1986. Thus, although the females are fairly evenly dispersed throughout core neighbourhoods, the males are more heavily concentrated in some tracts than others. Between 1971 and 1986, the number of positive and negative outliers is relatively equal. In the case of positive outliers, most are located in tracts immediately adjacent to the core, toward the east and west. These generally include Tracts 60 to 65 (see Fig. 2). In addition, Tract 11, situated at the southwest boundary of the inner city, shows a marked increase between 1971 and 1986. This tract, which has a very high concentration of young males to begin with, increases even more and becomes an outlier by 1986. In terms of negative outliers, they are generally located in the south (Tracts 30, 31, 39, and 40), and the northeast (Tracts 86 and 87), and these tracts show little change over time. Also, the values of the negative outliers do not fluctuate very much, and remain relatively stable during the given time period. The positive outliers (Tracts 61 to 65, 90, 120, 121, and 125), on the other hand, do fluctuate, and some tracts, such as Tract 61, decrease to a point where they can not be deemed as outliers any longer. However, the quotient values are still high enough to indicate a larger concentration of young males and females when compared to the rest of the CMA.

In Vancouver, young females are unevenly dispersed throughout core neighbourhoods to a larger extent than young males. In addition, the variability of young males decreases over time to yield a relatively even distribution over all (Tables 21 to 24). Young females, however, do not change much in this respect over time. In general, core neighbourhoods in Vancouver has more negative than positive

outliers, although by 1986 there is a relatively equal split for young females. Over time, the number of negative outliers remain relatively unchanged, whereas positive outliers are increasing with regard to young females. Thus, there are some tracts which remain either unavailable or unattractive for extensive residential use, while other tracts are exactly the opposite. The location of positive outliers are generally in two areas. The first area (Tract 60) is adjacent to the core amidst other tracts of very high concentrations of young males and females (Fig. 3). However, after 1971, this tract becomes less extreme and more like its neighbouring tracts. The second area (Tracts 40, 47, and 48) is located in the soutwest corner of the inner city on the south side of False Creek. These tracts, which emerge as positive outliers after 1971, are likely the result of new, upscale residential development constructed during the time period (Cybriwsky, Ley, and Western 1986; Ley 1987). In terms of the actual values for the location quotients (Tables 21 to 24), it appears that the negative outliers are increasing over time. Thus, these tracts (57 to 59), are strengthening over time and becoming more available and/or attractive for young males and females and possibly for gentrification. In addition, their quotient values, by 1986, are either close to or above 1, which suggests that higher concentrations of these variables can be found in this area. With regard to positive outliers, they too are strengthening over time, and thus many inner tracts show a very high concentration of young males and females overall.

In Winnipeg, males in the 25-34 age group are generally more variable than females, although both groups seem to be relatively evenly distributed in core neighbourhoods (Tables 25 to 28). Between 1971 and 1976 there are generally more negative than positive outliers. However, between 1981 and 1986 this situation is

reversed. Thus, by 1986 there are more positive extreme cases in core neighbourhoods. In 1971, Tract 27, in the western corner of the inner city, emerges as a positive outlier for both males and females (Fig. 4). However, after 1971 its value decreases and is no longer extreme. Other positive outliers, which emerge after 1971 (Tracts 12 and 14) are located to the south of the CBD. Thus, these tracts have become more available and attractive for residential use since 1971. The negative outliers (Tracts 24, 35, and 36) are located in the northeast end of the inner city. However, these tracts, which have a fairly low concentration of young males and females, are generally on the increase (Tables 25 to 28). Hence, these tracts, like the positive cases, seem to be strengthening over time.

SMALL FAMILY SIZE

The values for the means of this group, which include NOCHILD, CHILD1, and CHILD2 can be seen in Figures 6 to 8. In the consideration of small family sizes (0 to 2 children), there has been a general decline in core neighbourhoods. However, by 1986, this decline has levelled off in all centres but Winnipeg, when absolute values are considered. Nevertheless, the apparent negative growth mentioned above can also be detected in the outer city as well (see Tables 1 to 4). In Montreal, it is interesting that families with 1 or 2 children are decreasing in core neighbourhoods and the outer city at more than double the rate of families with no children. Hence, it appears that families with no children are still more common

than families with 1 or more children. Moreover, this pattern is also apparent in Toronto, Vancouver, and Winnipeg. A final point is that for all centres, the CMA is the only area that appears to have experienced positive growth in small families overall.

With regard to the location quotients (Figures 13 to 15), families with no children have generally declined in concentration in all of the selected inner cities, when considered relative to the outer city and CMA (see Tables 5 to 12). On the other hand, families with 1 or 2 children have remained relatively constant until 1986, where a slight decrease can be seen.

The results which pertain to small families indicate that overall, the number of families with 0 to 2 children have been decreasing steadily since 1971. However, families with 1 or 2 children are declining at a faster rate than families with no children. One reason for this trend relates to demographic changes whereby women are delaying childbirth. Thus, when a large proportion of the inner city population is in the 25-34 age group (Weiss 1986, pp.253), it is highly probable that many of these persons are childless. In addition, modern social behaviour, which condones unrelated persons sharing a residence, as well as high rates of divorce, contributes to an increase in the number of single people who choose to live in the inner city. Another reason for a decrease in families is the "undoubling effect" which serves to decrease the size of the household. An inspection of Statistics Canada Census data for the years 1971 to 1986 reveals the fact that household sizes and the number of families per household have been declining over time in all four cities. Thus, by 1986, the largest proportion of households contain 1 to 3 people, or 1 family.

Increases over the fifteen year period include families with no children or 1 child, and households with less than 3 persons.

Thus, a smaller number of families, with few or no children are occupying the inner city housing stock than in the past. This fact, as well as the large number of single people occupying dwellings in core neighbourhoods have served to decrease the population as well as the number of children who reside there. Thus, the results for the number of small families do not necessarily support the traditional definition that identifies gentrification with families of 1 or 2 children. Finally, the location quotients for families with 1 or 2 children clearly identify a higher concentration in the remainder of the CMA when compared to core neighbourhoods. Hence, this pattern is explained by contemporary social and demographic trends which seem to be appearing in all areas of the contemporary city, and therefore, is not simply a characteristic of core households or the gentrification process.

OUTLIERS: SMALL FAMILY SIZE

Through the study of individual census tracts and their respective outliers, a closer examination of inner city trends can be achieved. In the case of Montreal (Tables 13 to 16), the results for individual location quotients indicate that families with 0 to 2 children are very similar and do not vary much in core neighbourhoods. However, families with no children still appear to be more common than families

Figure 10: Mean Values for Core Neighbourhoods, Families With No Children.

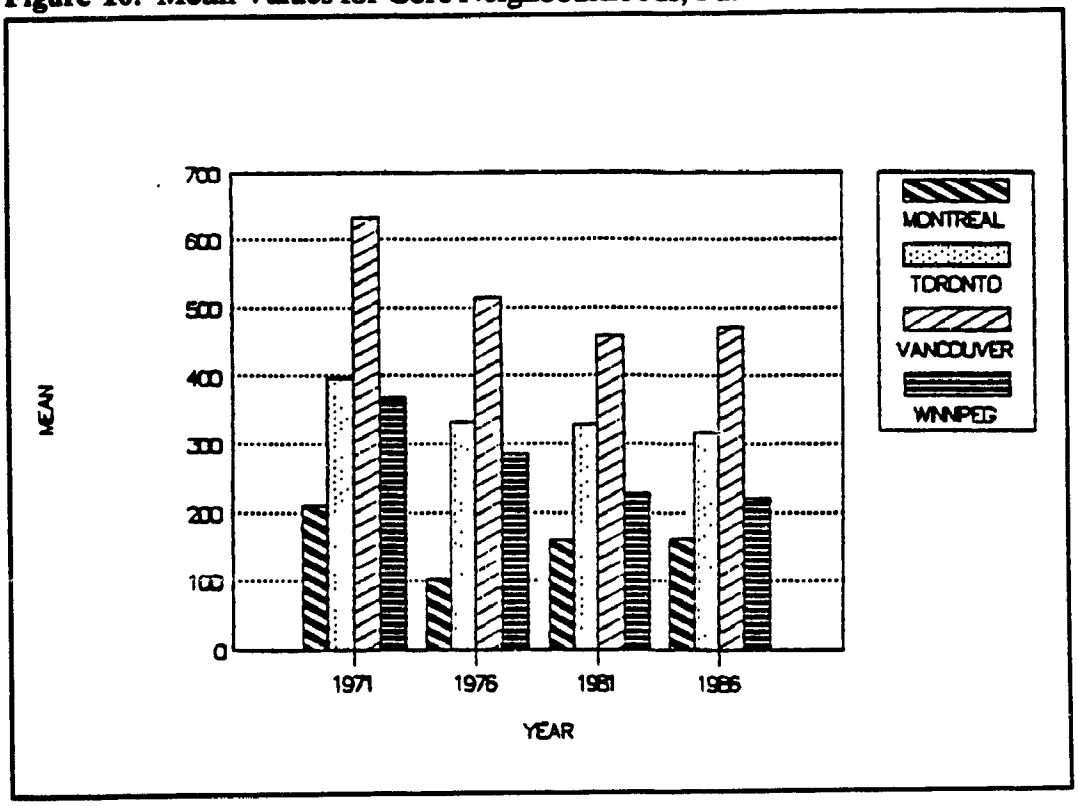


Figure 11: Mean Values for Core Neighbourhoods, Families With 1 Child.

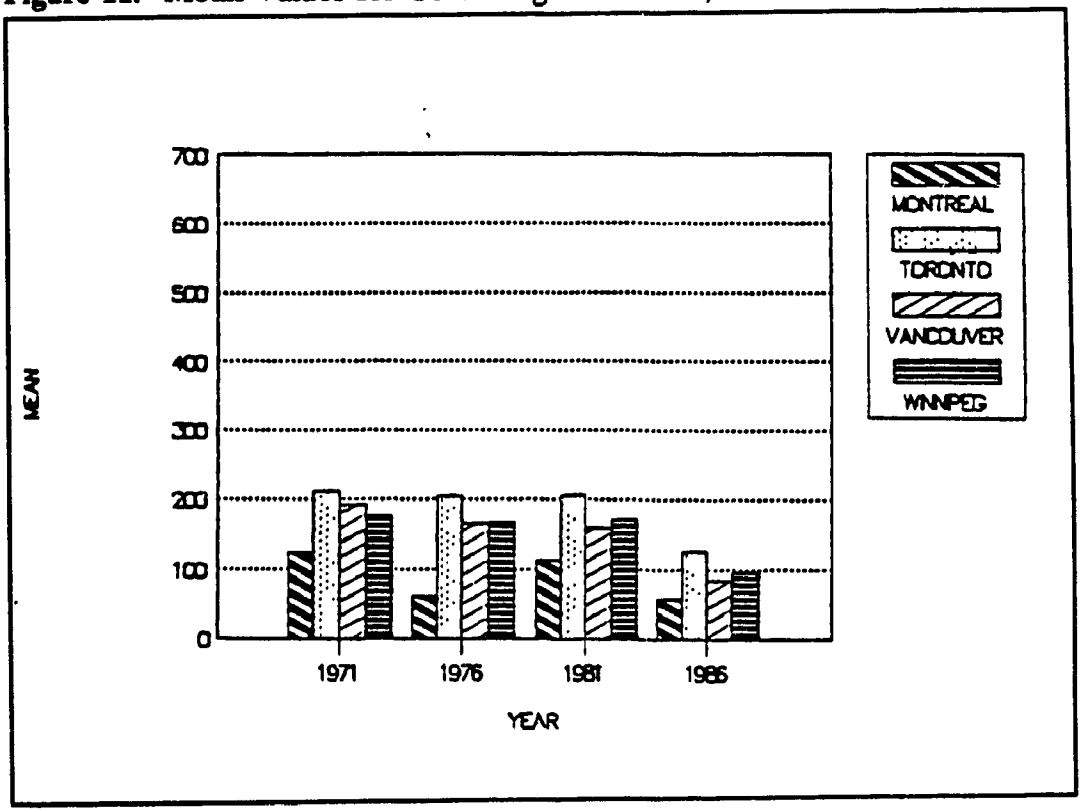


Figure 12: Mean Values for Core Neighbourhoods, Families With 2 Children.

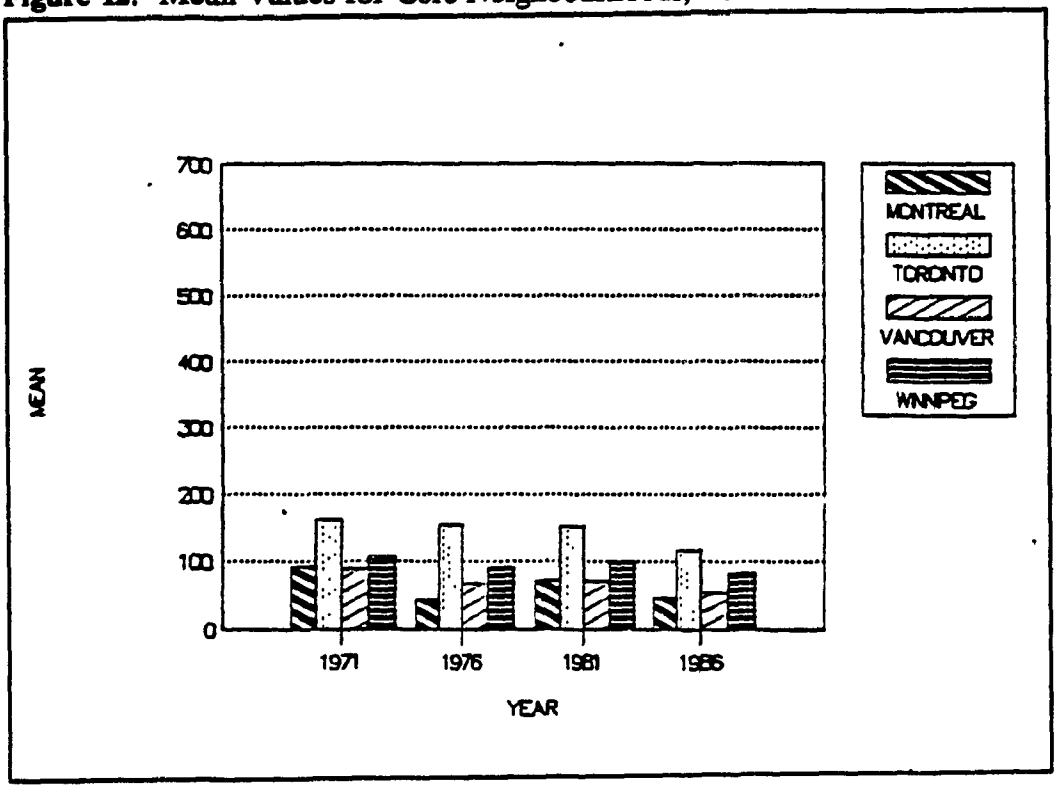


Figure 13: LQ's for Core Neighbourhoods, Families With No Children.

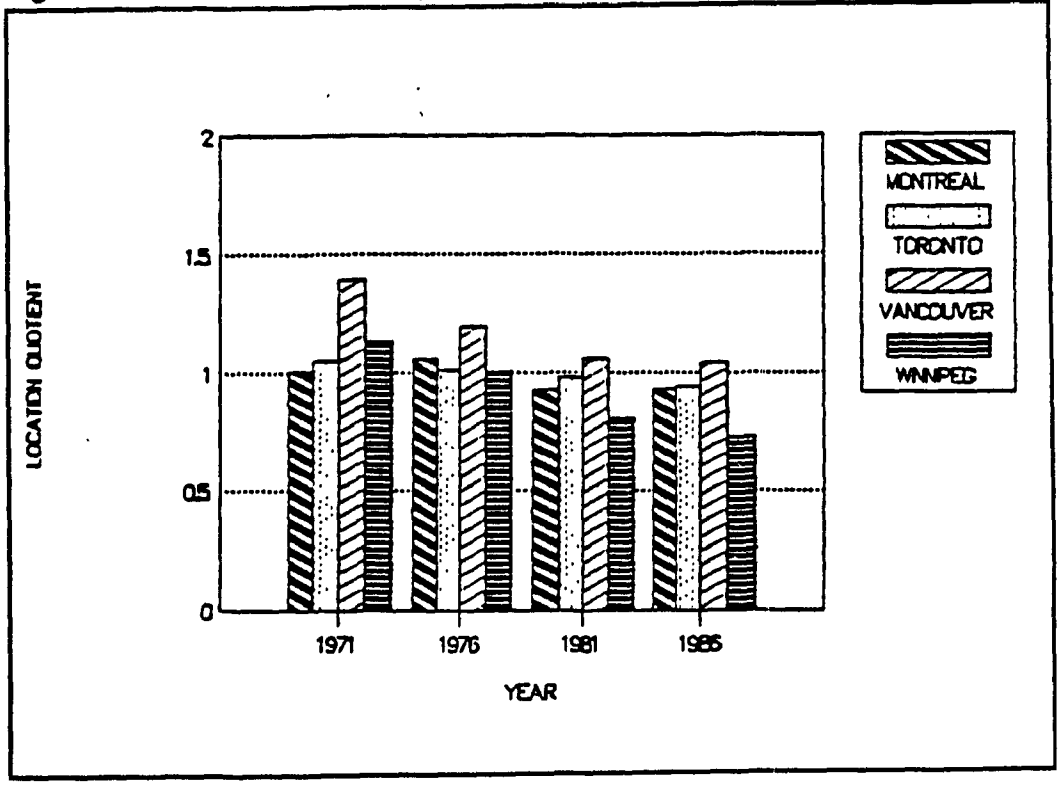


Figure 14: LQ's for Core Neighbourhoods, Families With 1 Child.

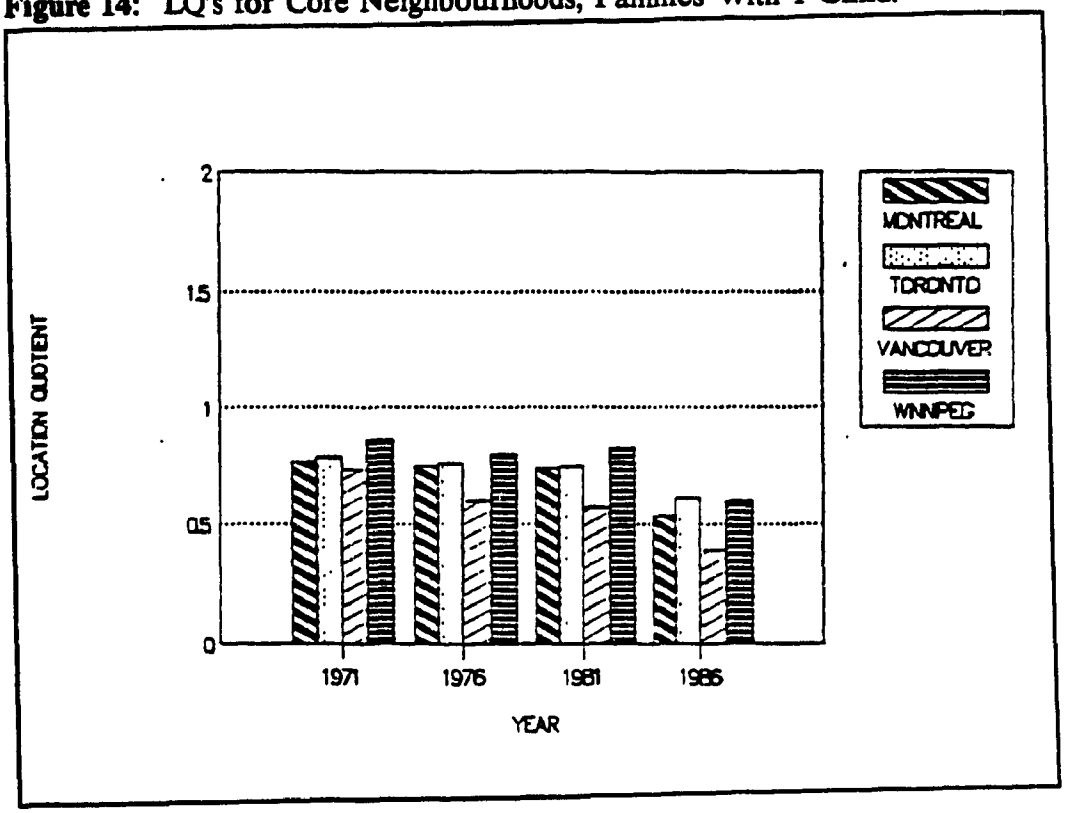
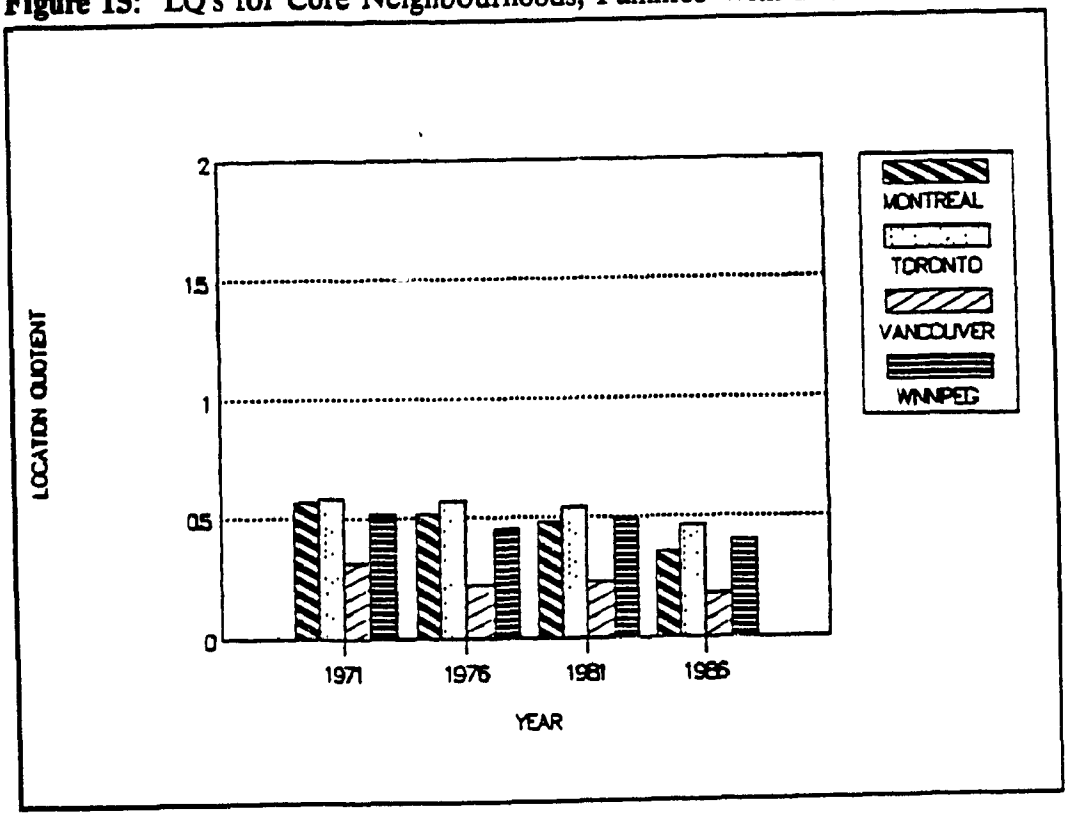


Figure 15: LQ's for Core Neighbourhoods, Families With 2 Children.



with 1 or 2 children. In addition, the relatively low variability of small families shows little change over time and therefore indicate few differences between census tracts. In terms of the number of positive and negative outliers there are fluctuations over time. However, after 1971, the number of positive outliers is increasing. Hence, more census tracts are showing higher concentrations of small families. Further, the results indicate that most of the positive outliers for families with no children are concentrated in Tracts 127 to 130, in the nortwest part of the inner city, and this does not change much over time (Fig. 1). However, with respect to families with 1 or 2 children, changes in location do occur. In 1971, positive outliers can be seen in Tracts 135, 137, 163, and 164 in the northeast part of the inner city, adjacent to the core. However, by 1986, these outliers are scattered throughout the whole northeast area, and into part of the southwest inner city as well (Fig. 1). Thus, families with no children tend to remain in one area, while families with 1 or 2 children tend to spread out over time. Therefore, it appears that as the number of positive outliers increases in core neighbourhoods, they are becoming more attractive to families with 1 or 2 children. Negative outliers, where very low concentrations of small families exist, although tending to decrease in numbers over time, are generally located in Tracts 53 to 69 in the southeast part of the inner city. Thus, it is likely that most of these tracts are largely unavailable for residential use because of the existence of other land uses, such as industry. In terms of the actual values of the location quotients (Tables 13 to 16), it can be seen that families with no children tend to strengthen over time. Families with 1 child, however, show very minor changes and thus remain relatively stable. Further, families with 2 children seem to be weakening over time. Thus, like the earlier

results of this thesis, families with no children tend to be stronger than families with 1 or 2 children, which implies that children are not that common to the inner city.

In the case of Toronto, the results imply a relatively small variation between census tracts with regard to small families, and that this variation shows few changes over time (Tables 17 to 20). However, families with no children still have a higher concentration overall. In general, core neighbourhoods in Toronto has more positive than negative outliers and this relationship remains relatively stable over time. Positive outliers for families with no children are generally located either adjacent to the core (Tract 62) or to the northeast (Tracts 118, 122, 124) and northwest (Tract 87). The negative outliers are located in the southeast portion of the inner city (Tracts 31 to 34, Fig. 2). In addition, the location of these outliers does not change much over time. With regard to families with 1 or 2 children, most of the negative outliers can be found in the southeast part of the inner city in similar tracts to that of families with no children. Positive outliers, however, are located either in the west and southwest corner of the inner city (Tracts 40, 41, 56), or to the northwest and northeast (Tracts 93, 94, and 125). However, these tracts differ from the tracts which were represented by families with no children. In terms of the actual quotients (Tables 17 to 20), the values for families with no children are weakening slightly over time, while families with 1 or 2 children fluctuate but remain relatively the same. Thus, the results indicate that children are not very highly concentrated in core neighbourhoods, and in the case of Toronto, this has not really changed much over time.

In Vancouver small families do not vary much between census tracts, and this remains the same over the given time period (Tables 21 to 24). Thus few

differences exist between most census tracts. In general, the number of positive and negative outliers are similar, and this relationship changes little. Positive outliers are located to the west of the core (Tracts 62 and 63), and to the south (Tract 49.2). In addition, these locations are not altered much between 1971 and 1986 (see Fig. 3). Negative outliers, which also remain in similar locations, can be found to the east and northeast of the core (Tracts 58 and 59). These tracts are likely unavailable for residential use due to the existence of other land uses, such as commerce and industry. With regard to the actual values of the location quotients, positive outliers for small families seem to be weakening steadily over time. On the other hand, negative outliers decrease until 1981, and then tend to stabilize. However, it should be noted that by 1986, concentrations of families with 1 or 2 children are still very low when compared to the rest of the CMA.

In Winnipeg, the variability of small families between census tracts is relatively low and similar between 1971 and 1986. In general, there are similar numbers of positive and negative outliers, and is not altered significantly over time. Positive outliers are located to the south of the core (Tracts 12 and 14), and at the west end (Tracts 27 and 28). Negative outliers tend to be located in tracts adjacent to the core (Tracts 13, 24, and 25) where the availability of residential land use is likely to be lowest (Fig. 4). Overall, these locations remain very similar during the given time period. In addition, the actual location quotient values of the positive outliers tend to decrease or weaken over time (Tables 25 to 28). Negative outliers for families with no children also weaken until 1981 when they seem to stabilize. Finally, families with 1 or 2 children fluctuate but have weakened by 1986. Thus,

the results for small families tend to reflect ongoing trends as described earlier in this thesis.

HIGH LEVELS OF EDUCATION

The values for the means for UDEGREE are included in Figure 16. Overall, the proportion of individuals attaining a university degree has risen extensively in the past fifteen years. However, in Toronto, the increase is stronger in the outer city (425.1%), and the CMA (568.3%), as compared to core neighbourhoods (273.6%, see Tables 1 to 4). Moreover, while actual values differ, this trend is consistently the same for all centres.

In terms of the location quotients (Figure 17), the following patterns emerge. First, values for Montreal and Vancouver are shown to be increasing while Toronto has been relatively stable since 1971. Overall, the quotient values are well above 1 which indicates a very high concentration of individuals with university degrees in core neighbourhoods relative to the outer city and CMA. Winnipeg, however, is an exception, as the concentration has decreased to a point where its proportion of degrees is less in core neighbourhoods than the CMA. This decrease is probably due to the fact that since Winnipeg is smaller in size and younger than the other three centres, distances are smaller, and thus, for the most part, the periphery is to be more attractive than the core. Due to the small size access to the inner city and amenities is relatively easy. Hence, a typical well educated individual would not have much to gain by living in the inner city, unless for purely personal reasons.

Nevertheless, in Montreal, Toronto, and Vancouver, the results show that people with university degrees are choosing to live in core neighbourhoods. One factor which could influence this trend is the fact that these cities have universities which are located in the core, and are attracting a population which is university oriented. Further, the increase in highly-educated residents is also a function of the changing social and economic factors which have served to allow more people to pursue a university education, and thus, since 1960, the growth of post-secondary education in Canada has been quite substantial (Statistics Canada 1983). In addition, another factor which has influenced this growth is the aging of the baby boom cohort. However, it should be noted that since Statistics Canada allows individuals to choose either their parents' or university address at the time of a census (Weiss 1986), this population can include more than just the permanent residents. Finally, with regard to individuals with university degrees, although some inner cities are relatively stable, the concentrations are very high. Thus, the results tend to support the idea of a well educated population in the inner city. Since educated people who live in core areas have often been linked with the process of gentrification, the results of this research reaffirm such a claim.

Figure 16: Mean Values for Core Neighbourhoods, University Degrees.

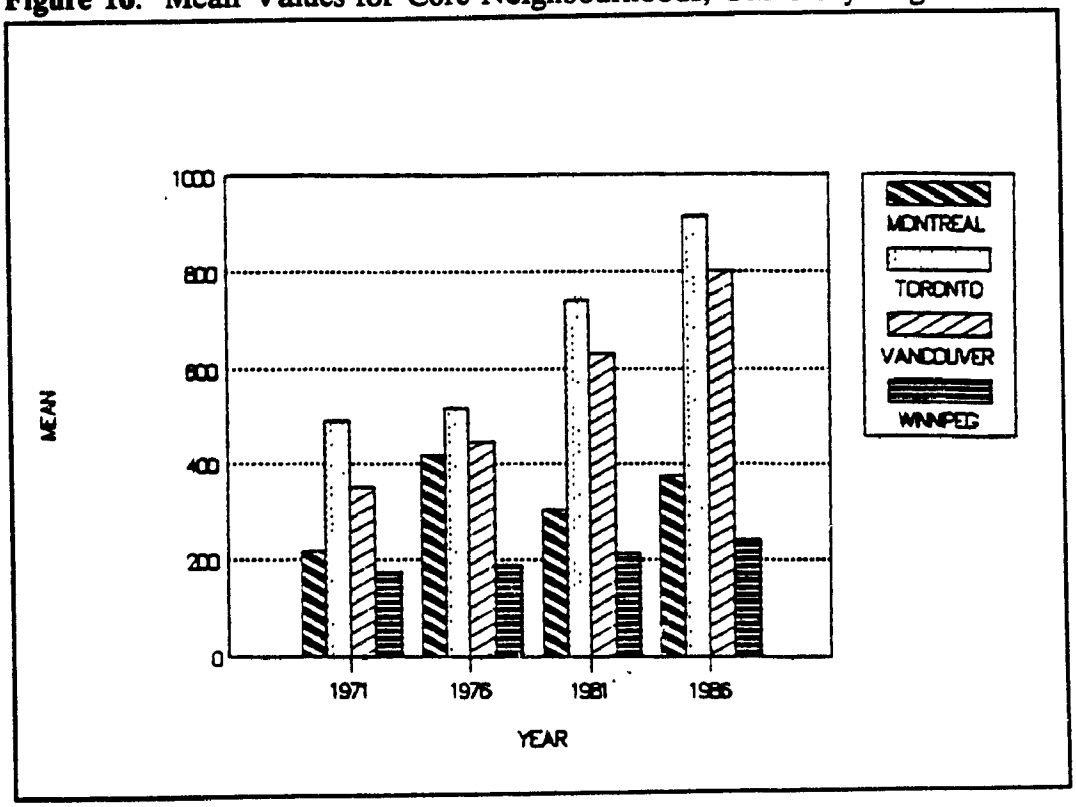
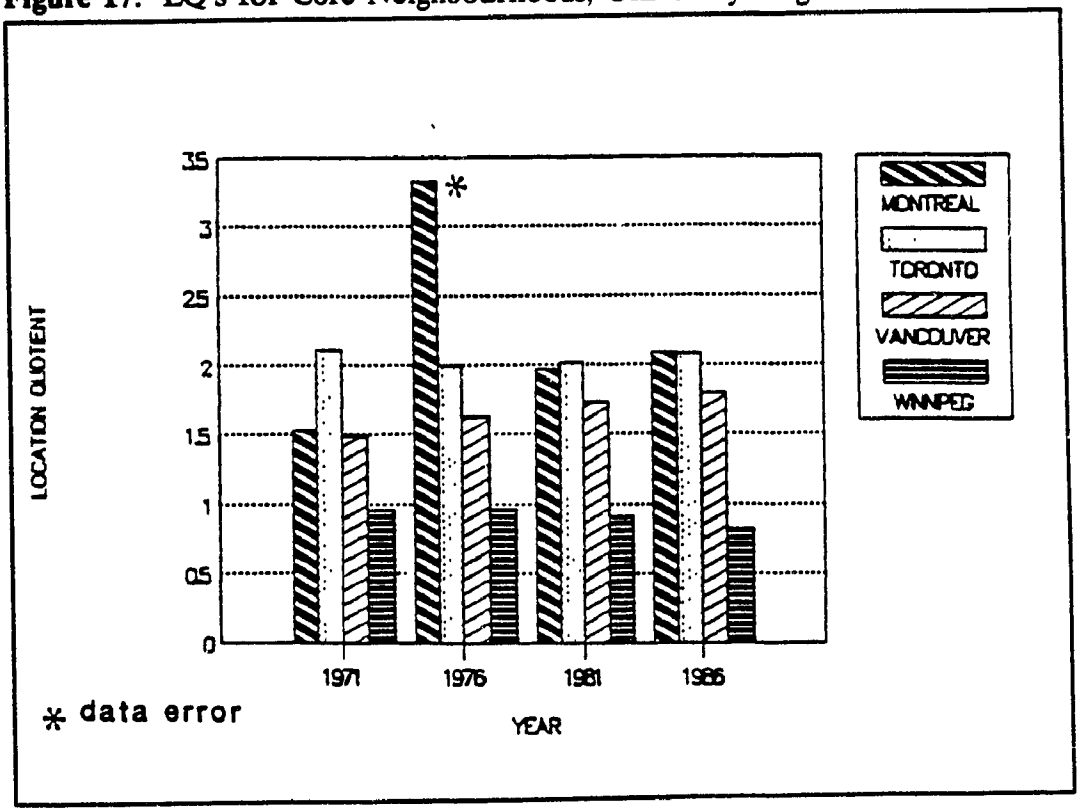


Figure 17: LQ's for Core Neighbourhoods, University Degrees.



OUTLIERS: HIGH LEVELS OF EDUCATION

The examination of outliers for core neighbourhoods in Montreal indicates that university degrees (DEGREE1, DEGREE2, MDEGREE, FDEGREE, UDEGREE) vary greatly between census tracts (Tables 13 to 16). This variability, which is consistent during the given time period shows that while most tracts contain a higher concentration when compared to the rest of the CMA, some tracts are even more extreme. Moreover, for inner city Montreal, this variability is decreasing over time, thus allowing the distribution of people with university degrees to become more even than before. However, even in 1986, the variability is relatively high. In addition, the results show that all extreme values are positive, and as implied earlier, have very high concentrations of university degrees. These positive outliers are generally located in two areas. The first area (Tracts 61 and 62) can be found adjacent to the core. The second area (Tracts 127 to 131) are found to the north of the core (Fig. 1). It should be noted however, that results for 1976 show extreme concentrations for males with university degrees in Tracts 70 to 75, and 138 to 144. Since these values and areas do not correspond to any other observations before or after 1976, it is assumed that these values are linked to certain errors in the census data, as stated earlier in the thesis. With regard to the actual quotients for the extreme cases (Tracts 61, 62, and 127 to 131), it appears that these high concentrations of individuals with university degrees remain relatively unchanged over time. Thus, when compared to the CMA, university degrees in core neighbourhoods remain very strong throughout the given time period.

For Toronto, the results for university degrees show a relatively high variability between census tracts (Tables 17 to 20). However, this situation decreases over time. Thus, although a relatively uneven distribution of individuals with university degrees exists in core neighbourhoods, this has lessened to some degree since 1971. In addition, no negative outliers exist from 1971 to 1976, but from 1981 to 1986 there are more negative than positive outliers. This finding is a result of extremely high values decreasing to a point where, although still very high, are not considered outliers any longer. Moreover, tracts with low concentrations have decreased even further, which is likely the result of less residential availability due to the invasion of other land uses. Positive outliers are generally located in Tracts 61 to 63 (adjacent to the core), and Tracts 86, 87, 122, and 125 to the northeast (Fig. 2). Negative outliers are located near the inner city boundary to the southeast (Tracts 30 and 31), to the southwest (Tracts 40 and 41), and to the west (Tract 94). Finally, as implied earlier, positive and negative outliers weaken in value over time (Tables 17 to 20). Thus, although it is likely that less tracts are available for residential use, most tracts still contain a very high concentration of people with university degrees, when compared to the CMA.

The results for Vancouver show that the variability between census tracts for individuals with university degrees is relatively high, and does not change much over time (Tables 21 to 24). For Vancouver, this suggests that while some tracts contain very high concentrations, others are very low. The number of positive and negative outliers are very similar in core neighbourhoods, and this relationship varies little over time. In general, positive outliers are located to the south of False Creek (Tracts 47 and 49), and to the west of the core (Tracts 61 and 62). Further, these

tracts remain highly concentrated over time (Fig. 3). Negative outliers are located to the northeast of the core between 1971 and 1986. These include Tracts 57 to 59. In terms of the actual quotient values (Tables 21 to 24), the positive outliers remain very high and relatively stable. The negative outliers, on the other hand, seem to generally strengthen over time, and thus increase their concentrations of individuals with university degrees. Thus, these tracts may becoming more available and/or suitable to this group, although the values are still low.

For Winnipeg, university degrees remain highly varied throughout core neighbourhoods during the given time period (Tables 25 to 28). Moreover, there are no emerging negative outliers over time, thus existing cases contain very high concentrations and are positive. For core neighbourhoods in Winnipeg, positive outliers for university degrees are located to the south of the core (Tracts 12 and 14), and to the northwest (Tract 27). However, Tract 27 disappears as an outlier after 1971 (Fig. 4). In terms of the actual quotient values, there is a general decreasing trend over time. However, by 1986, the proportion of university degrees is still very high in core neighbourhoods, when compared to the CMA.

PRESENCE OF WORKING WOMEN

The presence of working women (FPRATE) can be observed in Figure 18. In general, it can be seen from the absolute means for core neighbourhoods, that the proportion of women who work has been increasing steadily over time. The corresponding growth coefficient for core neighbourhoods in Toronto shows the

increase to be 12.3%. This trend can be seen in the outer city (11.6%), and the CMA (14.5%, see Tables 1 to 4). Thus, it seems obvious that the rate of change in working women is similar throughout all areas of Toronto. Taken further, similar increases have been observed in Montreal, although the values for Vancouver and Winnipeg show less growth in their core neighbourhoods overall.

In terms of the location quotients (Figure 19), the concentration of working women in the inner cities of Vancouver and Winnipeg have decreased over time, while inner city Toronto has remained relatively stable, and Montreal has fluctuated since 1971. By 1986, the values for Montreal, Toronto, and Vancouver are very close to 1, which suggests that the concentration of working women in core neighbourhoods is very similar to the outer city and CMA. In the case of Winnipeg, the value of 0.83 indicates a lower concentration in core neighbourhoods when compared to the remainder of the CMA.

With regard to females who work, the results generally show steady increases in core neighbourhoods, which indicates that more women are entering the labour force and that some are choosing to remain in the inner city. However, the location quotients indicate a decrease in concentration to a point where, by 1986, core neighbourhoods and the rest of the CMA are not that different as far as working women are concerned. Thus, it appears that although more women are entering the labour force, they are dispersed fairly evenly throughout the CMA, and this is very similar in all four centres, although to a lesser extent in Winnipeg. Therefore, these findings do not lend any support to the idea that working women, because their lives are more complicated in modern times than in the past, are choosing the inner city more than other areas as a place of

Figure 18: Mean Values for Core Neighbourhoods, Female Labour Participation Rate.

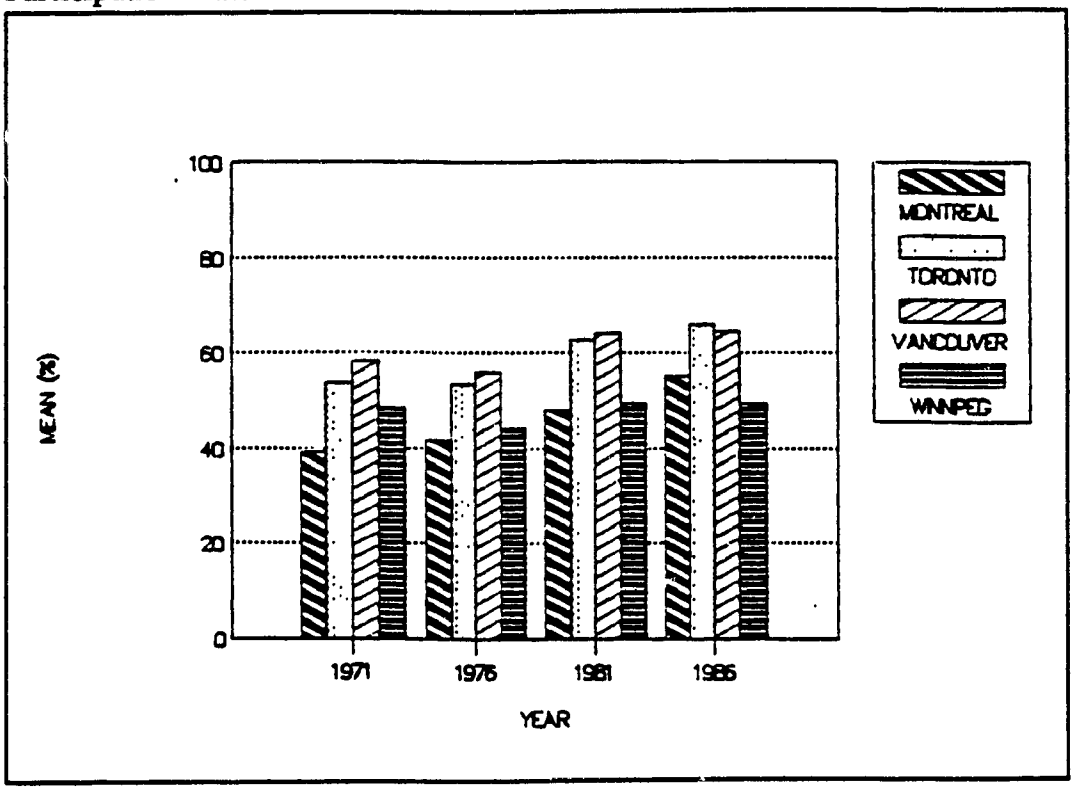
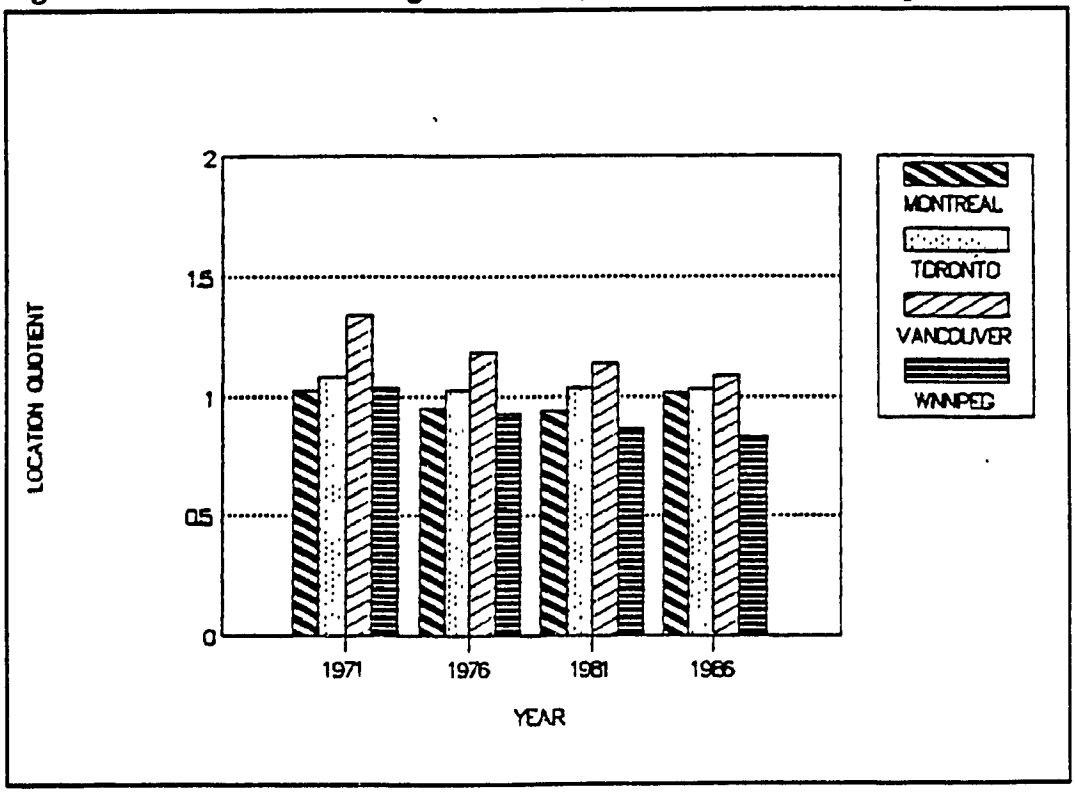


Figure 19: LQ's for Core Neighbourhoods, Female Labour Participation Rate.



residence. Hence, the theory presented in this thesis is not supported, and the link between contemporary working women and gentrification is not evident.

OUTLIERS: PRESENCE OF WORKING WOMEN

In the consideration of working women and individual census tracts in Montreal, certain patterns become evident. One finding is that the presence of working women does not show much variation between census tracts over time (Tables 13 to 16), thus indicating that most census tracts are similar for this variable. After 1971, the number of positive outliers decreases, while the number of negative outliers increases, which results in a relative balance after 1976. From 1971 to 1976 positive outliers are generally located to the west of the core (Tracts 64 and 65), and to the north (Tracts 127 to 132). After 1976 these tracts still maintain relatively high concentrations, but they are no longer considered outliers, since there are other tracts which emerge with even higher values (Fig. 1). These are adjacent tracts (64 and 134) to previously mentioned outliers. Negative outliers are found in two areas of the inner city. Tracts 46, 53, 57, and 60 are located to the northeast of the core, while Tracts 73, 76, and 79 are in the southwest part of the inner city (Fig. 1). In general, the actual quotient values (Tables 13 to 16) indicate that positive outliers, although weakening slightly over time, still maintain high concentrations, whereas negative outliers tend to strengthen. Thus, these tracts are becoming more available and desirable to working women in core neighbourhoods, although concentrations are still much lower than the rest of the inner city and CMA.

In Toronto, the variation between census tracts for working women is relatively low and slightly decreasing over time (Tables 17 to 20). Thus, it appears that there are few differences between census tracts and this situation is becoming stronger over time. Where outliers are concerned, the results for 1971 to 1981 indicate a larger number of negative outliers, for some centres. However, by 1986, positive outliers have increased to a point where they are relatively the same in number as their negative counterparts. In 1971, positive outliers are located in the core (Tracts 62 and 63). By 1976, values have decreased slightly so that Tract 117 (to the north) is also included as an extreme case (Fig. 2). From 1981 to 1986 Tracts 11 and 35, in the southwest part of the inner city, are also included to the list of positive outliers, although Tract 117 is removed. Negative outliers are found in the southern part of the inner city in Tracts 16, 30, 31, 33, and 39, although by 1981 Tract 16 has increased and is no longer a negative outlier (Fig. 2). Other than this tract, there are no changes over time. In terms of the actual quotient values (Tables 17 to 20), positive outliers have weakened slightly until 1981 where they tend to stabilize. Negative outliers, however, remain relatively unchanged over time.

For Vancouver, the results indicate a relatively low variability of working women between census tracts over time (Tables 21 to 24). In addition, there are generally more negative than positive outliers. In fact, for 1976 and 1986, there are no positive outliers at all. With regard to working women, positive outliers can be found adjacent to the core towards the south (Tract 60) in 1971, and adjacent to the core to the north (Tract 66) in 1986 (Fig. 3). Negative outliers are located to the northeast in Tracts 57, 58, and 59. In terms of the quotient values, positive outliers are weakening over time. Due to their locations near the core, the decrease if likely

a result of the invasion of other land uses other than residential into the area. Negative outliers, also weakening, suggest that, for working women, these areas are not available or suitable for inner city living.

In Winnipeg, there is a relatively low variability of working women in core neighbourhoods (Tables 25 to 28), which implies few differences between census tracts. In addition, this variability changes little over time. In terms of the number of outliers, positive outliers do not emerge after 1971, whereas negative outliers remain similar in number. For 1971, Tract 27, in the northwest corner of the inner city, has a higher concentration of working women, when compared to its neighbouring tracts, and the rest of the CMA. After 1971, the tract decreases in concentration to yield a value in 1986 which implies no real difference between this tract and the CMA. The only negative outlier between 1971 and 1976 is situated in the northeast corner of the inner city (Tract 36). In 1981, Tract 24, adjacent to the core, is included, as is Tract 34 (to the north) in 1986 (Fig. 4). With regard to the location quotient values (Tables 25 to 28), it is obvious that positive outliers have weakened over time, and thus there are no extremely high proportions of working women in core neighbourhoods. Negative outliers, however, have tended to fluctuate and remain relatively stable over time.

PROFESSIONAL OCCUPATIONS

The mean values for male professional occupations (MMAN, MTEACH, MMED, and MTECH), and female professional occupations (FMAN, FTEACH,

FMED, and FTECH), can be seen in Figures 20 and 21. There are four occupational groups for each gender which are given in Table 1, and have been defined as professional (see Chapter 3). Similarly, there are also corresponding growth coefficients for each occupation. However, in relation to the theory of this thesis, it seems more appropriate to consider the average growth contribution of professional occupations in general rather than the change in individual occupations. Therefore, an average growth coefficient has been derived from the given coefficients in the table. The result is one value of change for male professional occupations, and one value of change for female occupations.

Figure 20: Mean Values for Core Neighbourhoods, Male Professional Occupations.

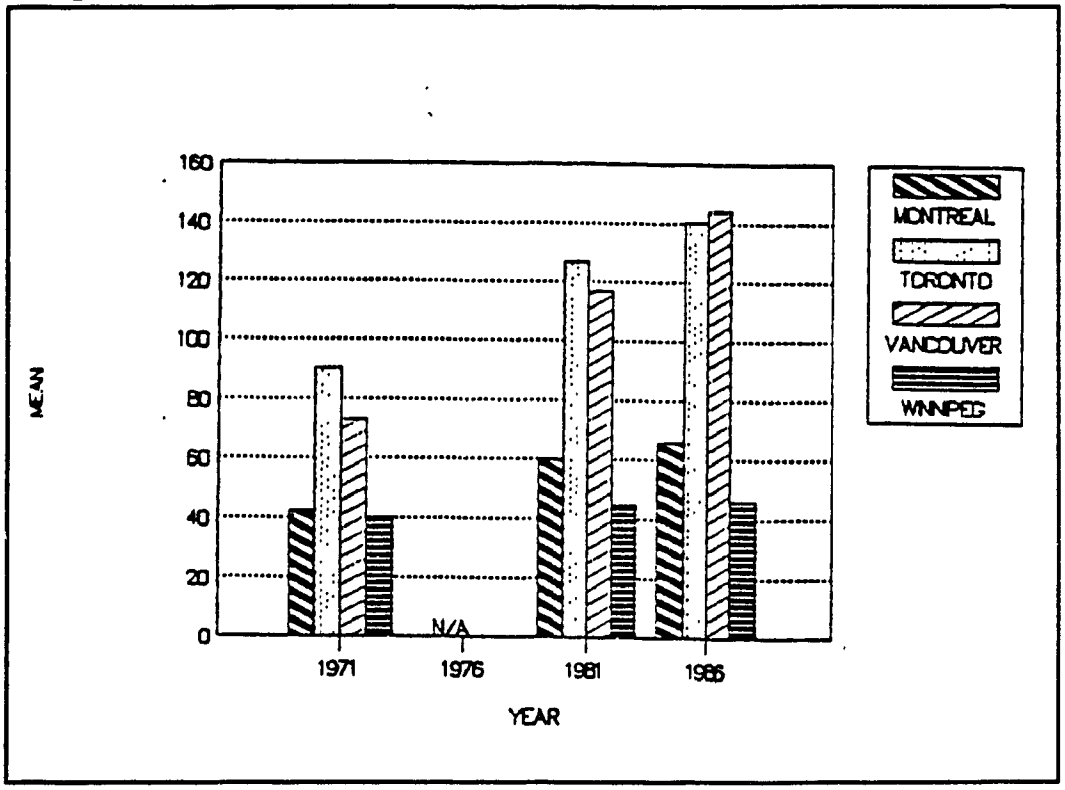
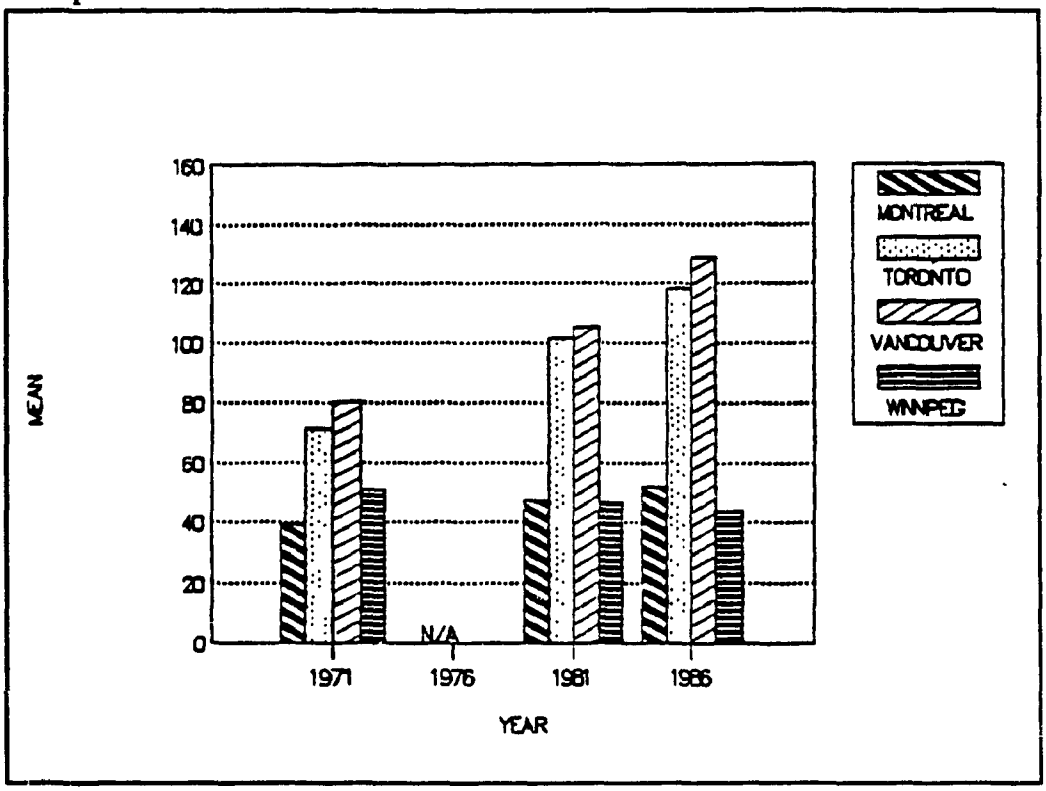


Figure 21: Mean Values for Core Neighbourhoods, Female Professional Occupations.



Thus, it can be shown that in Montreal, male and female professional occupations have increased in all areas. However, the results are not as strong as what might be expected for core neighbourhoods when compared with the outer city and the CMA where the growth for males is 83%, and the growth for females is 326.2% (see Tables 1 to 4). For Toronto, the rates of growth are very similar to that of Montreal, although the value for female occupations is approximately double. In Vancouver, the values indicate much more rapid changes, whereas Winnipeg seems to lag behind the other three centres. In addition, it is interesting to note that in all centres, female professional occupations are increasing over time and they appear to be doing so at a much faster rate than male occupations. This can be seen in core neighbourhoods, the outer city, and CMA. Thus, the results show that, taken

collectively, female professional occupations have grown more rapidly than male professional occupations. Moreover, with relation to the inner city, the greatest difference in these types of occupations can be seen in Toronto.

In terms of the location quotients (Figures 22 and 23), an average quotient is used to consider changes in the groups overall, rather than individual occupations. Thus, the concentration of male professional occupations has been increasing in core neighbourhoods relative to the outer city and CMA. This trend is consistent in all cases, except Winnipeg, where males have remained relatively stable over time. In the case of female professional occupations, it is interesting to note that in 1971, the concentration is much higher in core neighbourhoods than males. Moreover, the values suggest a decrease in this concentration to a point where, by 1986, the two groups are reasonably balanced. This decrease is influenced by the overall growth of the CMA and the fact that an increasing number of women in the professional labour force choose to live in areas other than the inner city. In addition, the quotients are well above 1 in all centres but Winnipeg, which suggests that people in professional occupations are more concentrated in core neighbourhoods than anywhere else. In Winnipeg, however, the opposite is true.

With regard to the incidence of male and female professional occupations, the location quotients suggest a high concentration of these professionals in core neighbourhoods as opposed to the rest of the CMA. However, for women, the concentration is on the decline. Thus, this trend supports the idea of a high status population in core neighbourhoods, and therefore reaffirms the definition of

Figure 22: LQ's for Core Neighbourhoods, Male Professional Occupations.

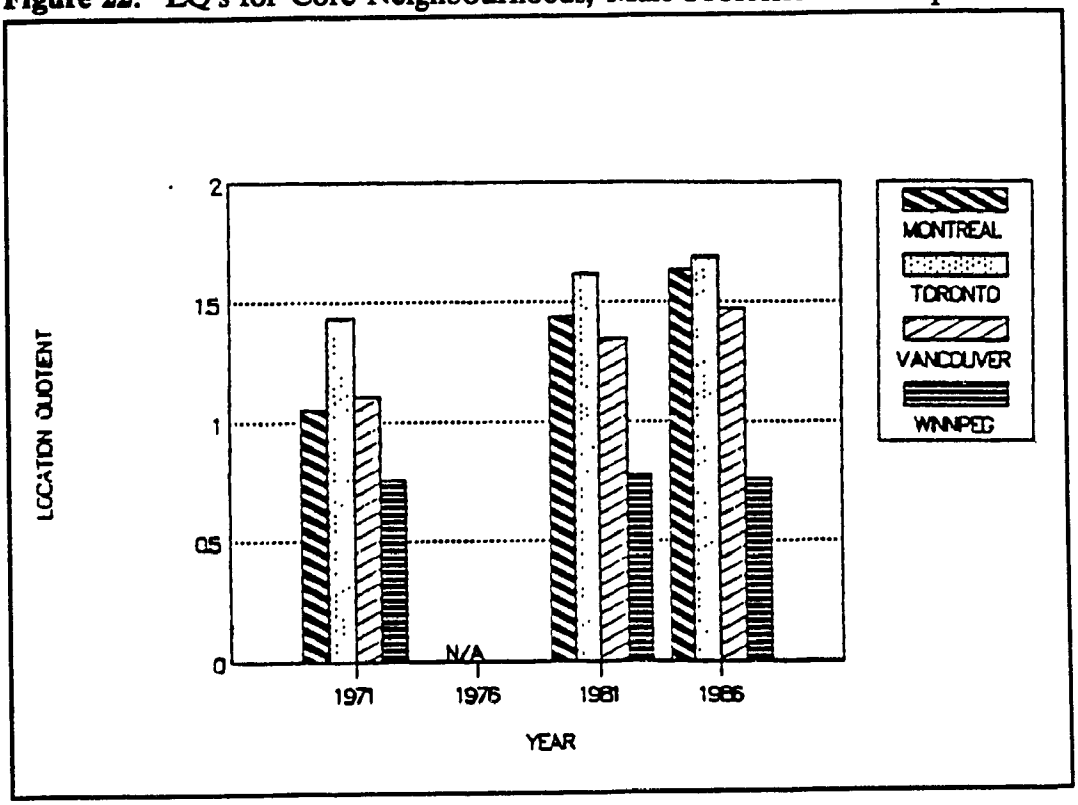
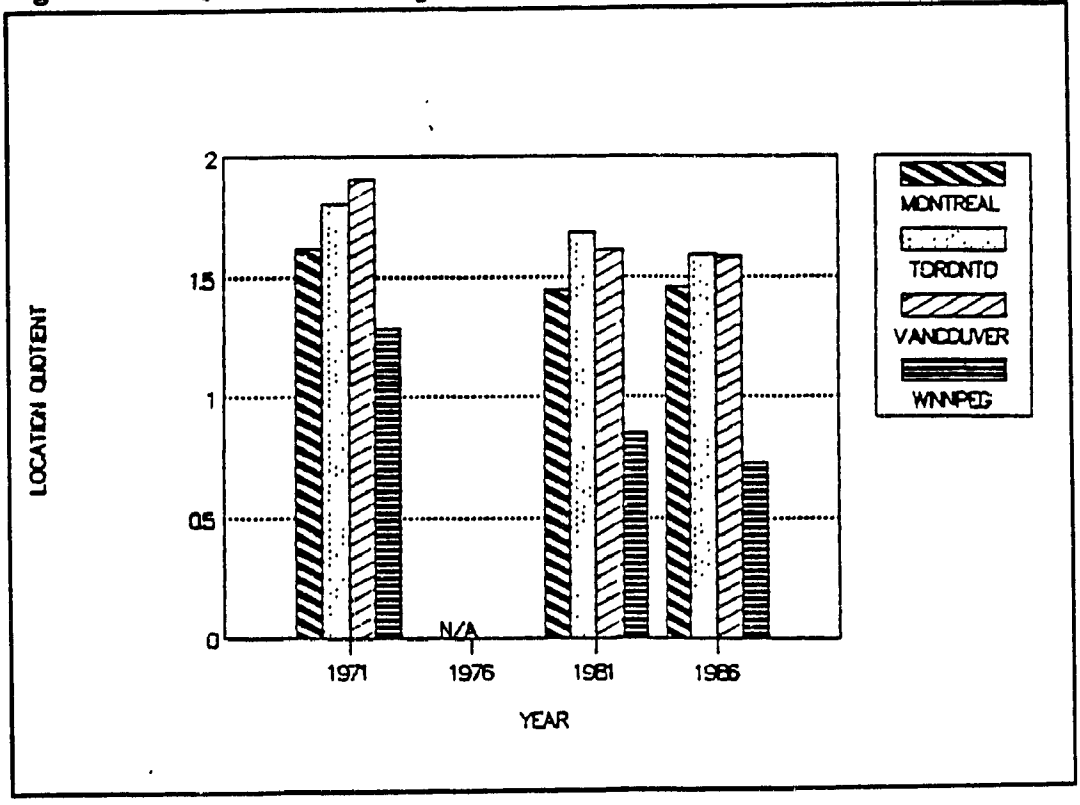
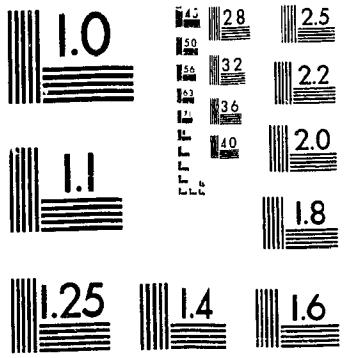


Figure 23: LQ's for Core Neighbourhoods, Female Professional Occupations.





gentrification as it has been portrayed in traditional gentrification studies. Further, this trend is consistent in all centres except Winnipeg, where the lower concentrations for both male and female professional occupations is a function of the structure and size factors as mentioned earlier.

One factor which can explain the number of professionals in the central city is the expansion of commercial and office space which took place during the 1970s. This caused the number of available professional type occupations to increase, thus causing core areas to be more attractive. However, increased transportation and housing costs, as well as the desire for cosmopolitan lifestyles caused some to seek housing in core neighbourhoods, thus contributing to gentrification and central city revitalization. Moreover, the results for this thesis seem to suggest that many of these individuals were women.

In terms of female professionals, it is obvious that although more and more women are choosing to work, the proportion that chooses to live in the inner city is becoming smaller. Thus, if less women are choosing the inner city as a solution to their lifestyle and locational needs, then there is no evidence to support the theory that working women are attracted to the inner city.

With regard to incomes (Figures 24 to 26), the findings suggest that female median incomes have increased at a faster rate than male median incomes. In central Montreal, the rate of growth between 1971 and 1986 for female median income has risen 100.9% faster than the male median income. This difference between the incomes is consistent in the other areas as shown by values of 64.6% in the outer city, and 61.7% in the CMA (see Tables 1 to 4). Moreover, this rapid growth of female incomes is consistent in all centres.

Figure 24: Mean Values for Core Neighbourhoods, Male Median Income.

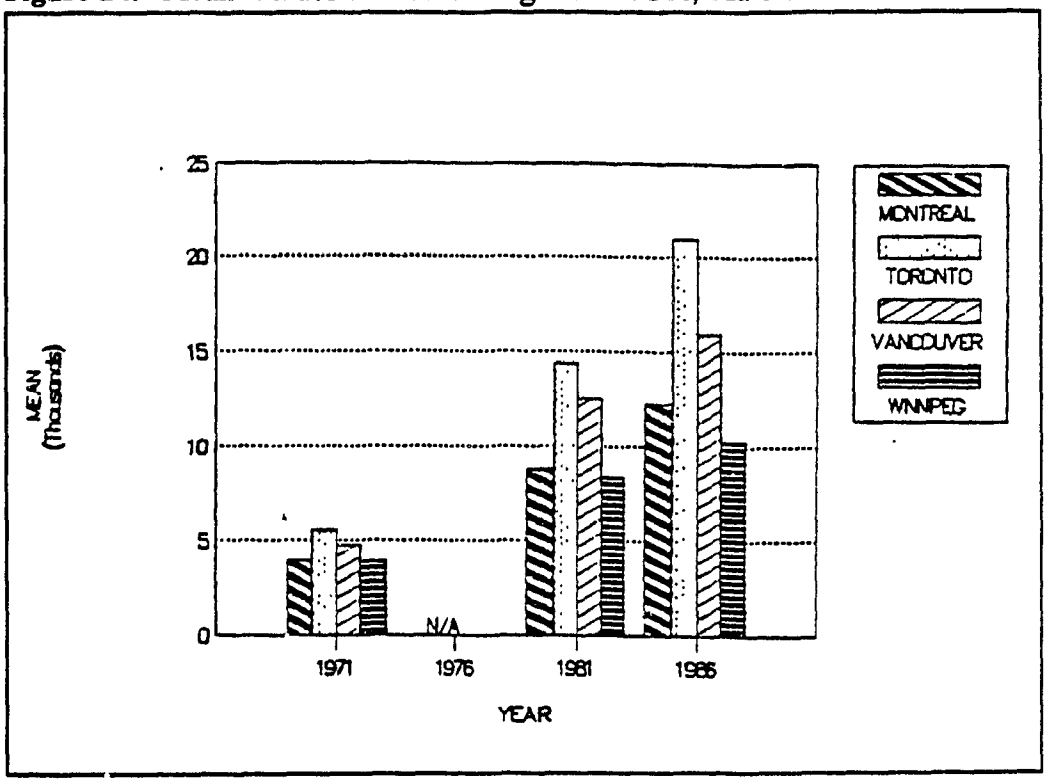


Figure 25: Mean Values for Core Neighbourhoods, Female Median Income.

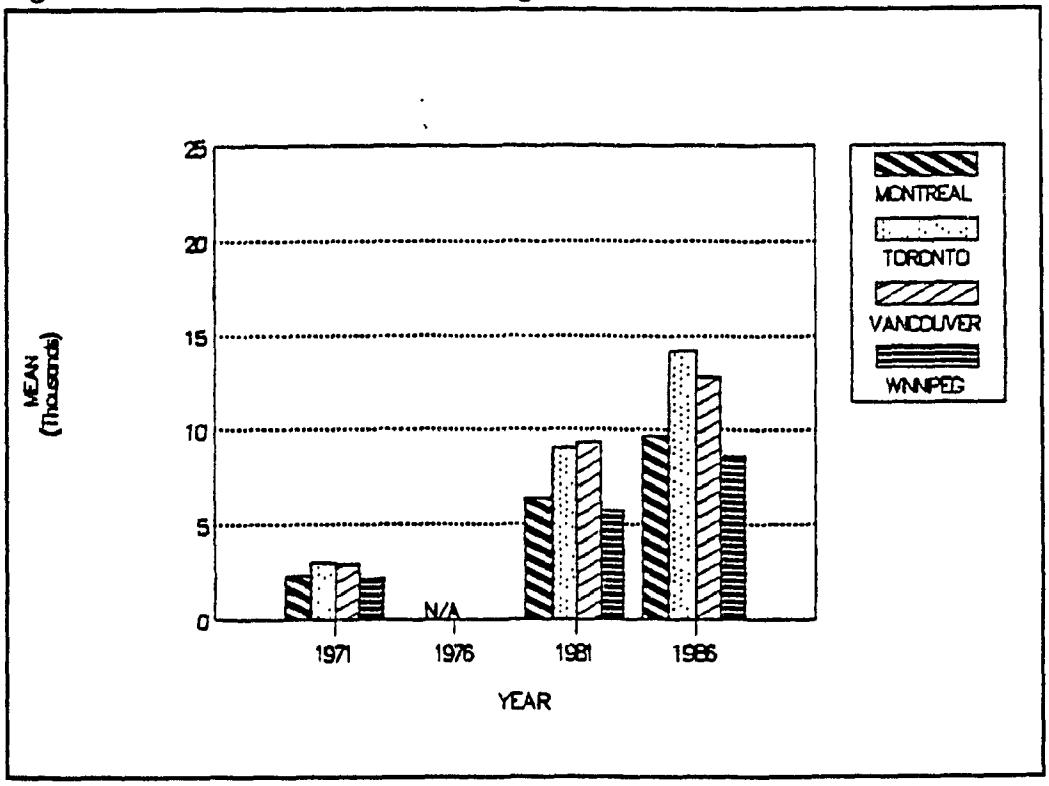
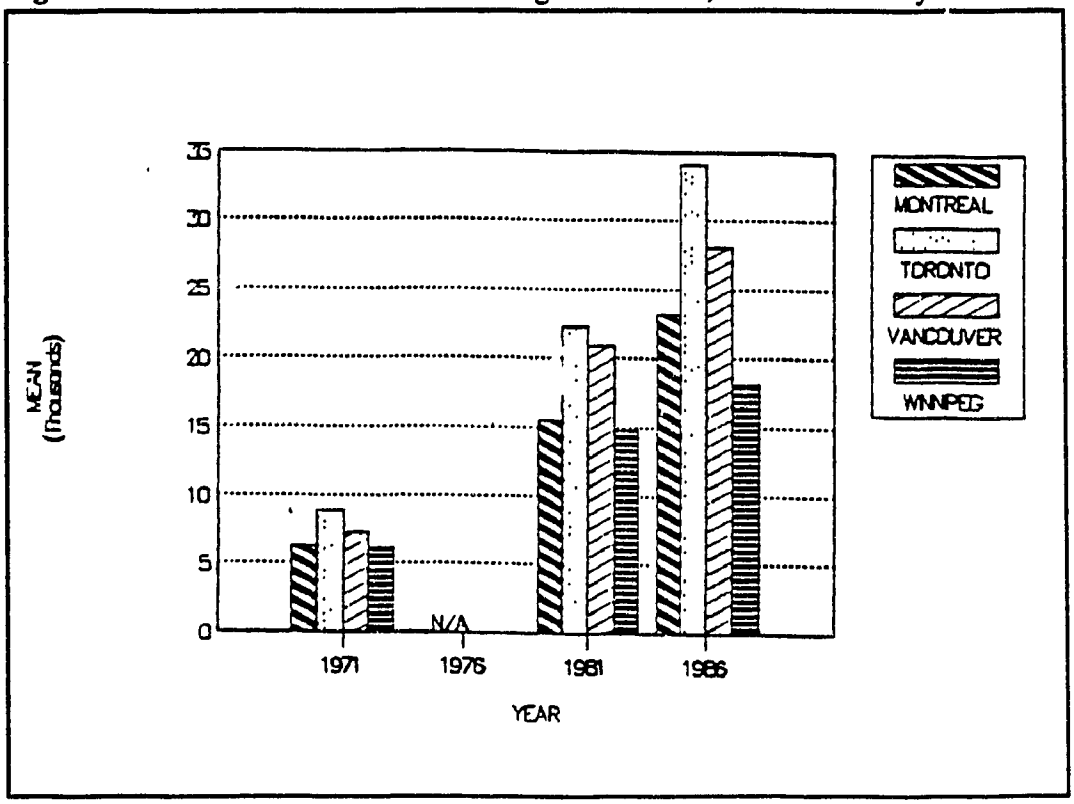


Figure 26: Mean Values for Core Neighbourhoods, Median Family Income.



Thus, the results indicate that although male incomes are still higher than female incomes, female incomes are increasing at a much faster rate. This is explained by more women entering professional occupations instead of low-paying clerical, service or labour intensive industrial occupations (Statistics Canada 1985; Weiss 1986). In addition, although the rate of growth of female incomes is high, it is very similar in core neighbourhoods and outer city, as well as the CMA. Thus, these findings seem to parallel the findings for the female labour participation rate, which show working women evenly distributed throughout the CMA as a whole. Hence, the results for female incomes do not offer support for the inner city as a primary locational choice for working women.

OUTLIERS: PROFESSIONAL OCCUPATIONS

The results for core neighbourhoods in Montreal (Tables 13 to 16) indicate a high degree of variation of professional occupations between census tracts (MMAN, MTEACH, MMED, MTECH, FMAN, FTEACH, FMED, FTECH). In 1971 the largest variation concerns females in the managerial, medical, and technical occupations. However, although still high by 1986, this variation has decreased to levels which are very similar to the male occupations. In addition, by 1986, it is males in the medical profession which show the highest variation overall. Thus, while male professional occupations show few changes over time, females seem to become more evenly spread than they were in 1971. This may be the result of more women entering professional occupations and the workplace in general. In terms of the number of outliers, there are no negative outliers for males or females until 1986. Thus, while the proportion of people in professional occupations is high to begin with, when compared to the CMA, there are some tracts which are even more extreme. In 1986, it is interesting that the emerging negative outliers are related to males and females in technical occupations. It is likely that this finding is linked to tracts which are becoming less available for residential use. Since this generally represents Tracts 57, 68, and 74 to 77, where quotient values for the other variables are also relatively low, such as assumption is likely to be true (Fig. 1). With regard to positive outliers, the results for 1971 show their locations to be in Tracts 62 and 65 (adjacent to the core), and in Tracts 127 to 131 in the northern part of the inner city. While these areas remain positive outliers over time, other tracts, such as 42,

59, 64, 66, 134, 140, and 164 in the northeast part of the inner city, are added to the list of high concentration areas between 1981 and 1986 (Fig. 1). Thus, over time, there are more tracts emerging with extremely high proportions of males and females in professional occupations. With regard to actual quotient values (Tables 13 to 16), there have been slighty fluctuations in concentrations over time. However, this is not really significant, since the values are still very high when compared to the rest of the CMA, and the fact that overall, there are more tracts emerging as extreme, during the given time period.

In Toronto, there is a high level of variation between census tracts for professional occupations (Tables 17 to 20). However, this variation generally decreases over time. Thus, while there are differences between census tracts, this difference has been weakening since 1971. In addition, the occupations with the highest variation by 1986 are females in technical professions, and males in teaching and medical professions. In 1971, there are no negative outliers in core neighbourhoods of Toronto. However, between 1981 and 1986, this fact is no longer true, as negative outliers are increasing in number. Thus, it is likely that more tracts are becoming unavailable for residential use by this group. Between 1971 and 1986, the positive outliers seem to be concentrated around the core in Tracts 60 to 65 and 89, and to the north in Tracts 90, 91, 86, and 119 to 125 (Fig. 2). Negative outliers, which emerge in 1981, are generally located in the southeast (Tracts 30 and 31), and to the west (Tracts 38 to 41, and 56). In addition, while fluctuations occur between census tracts, outliers seem to remain in these areas, and do not change much over time. In terms of the actual values of the quotients (Tables 17 to 20), some fluctuations have occurred, but the positive outliers have not weakened much over

time. In addition, the values are very high, and thus professionals are very heavily concentrated in these tracts when compared to the CMA. Negative outliers, however, seem to weaken, and thus indicate that the tracts which are unavailable or undesirable for residential use are even more unavailable for people in professional occupations by 1986.

In Vancouver, the greatest variation of professional occupations in 1971 concerns females in the managerial, medical and technical professions. Male occupations, although more variable than some of the earlier groups, such as small families, are far less variable that the female occupations mentioned above. Thus, for Vancouver, male professionals are more evenly dispersed in core neighbourhoods than female professionals. However, by 1986, the variability of female professionals has weakened to such a degree so that their dispersion is very similar to male professionals. This is likely a result of more women entering these occupations and choosing to live in the inner city. In terms of the number of positive and negative outliers, these tend to fluctuate over time but remain relatively the same. Positive outliers are generally located at the south end of the inner city (Tracts 39, 40, and 47) and to the west of the core (Tracts 60, 62, 66, and 67). Negative outliers, on the other hand, are located to the northeast in Tracts 57, 58, and 59.1 (Fig. 3). In addition, these locations remain relatively unchanged over time. With regard to the values of the location quotients (Tables 21 to 24), although some cases, such as female managers have weakened slightly, most have remained relatively stable over time. In addition, the values are very high, and thus imply that male and female professionals are very heavily concentrated in these tracts, when compared to the CMA.

For Winnipeg, the variability of males and females in medical occupations and females in managerial occupations is the greatest in 1971 (Tables 25 to 28). However, this variability decreases over time, and by 1986, the dispersion of these groups in core neighbourhoods is very similar. Thus, over time, the differences between census tracts is lessening where professional occupations are concerned. In addition, between 1971 and 1986, there are no negative outliers emerging in core neighbourhoods. Positive outliers during the given time period, are located in the southern part of the inner city (Tracts 12, 13, 14, and 15), to the northeast of the core (Tract 24), and to the west (Tract 27, see Fig. 4). Further, while the values of the quotients are such that they suggest and extremely high concentrations of professionals in these tracts, when compared to the CMA, they show few changes, and thus indicate relative stability over time.

CHANGES IN THE DEMAND FOR HOUSING

The mean values for owned housing (TOTALO) and rented housing (TOTALR), are shown in Figures 27 and 28. With regard to housing, some differences can be observed between cities. In Montreal, it can be shown that the number of dwellings which are owned in core neighbourhoods has risen 88% in the last fifteen years. This rate of change in ownership is higher than the values for both the outer city (46.9%), and the CMA (84.9%). On the other hand, when considering rented dwellings, inner city Montreal shows a negative growth of 12.7%, whereas the opposite is true for the outer city and especially the CMA (see Tables 1 to 4). In

Toronto and Vancouver, positive growth in owned and rented housing can be seen in all areas. In Vancouver, the number of owned dwellings in core neighbourhoods has grown at a much faster rate than rented dwellings, and this rate (103.9%) is higher than the values for the outer city (4.5%) and the CMA (68%). On the other hand, the rate of growth in owned and rented housing in the core area of Toronto is relatively the same. Finally, inner city Winnipeg has experienced a decline in ownership and a very small growth in terms of rented housing.

The location quotients (Figures 29 and 30) show that for all centres, the concentration of owned housing is less in core neighbourhoods than in the outer city and CMA. In addition, central Toronto seems to have a higher concentration when

Figure 27: Mean Values for Core Neighbourhoods, Number of Owned Dwellings.

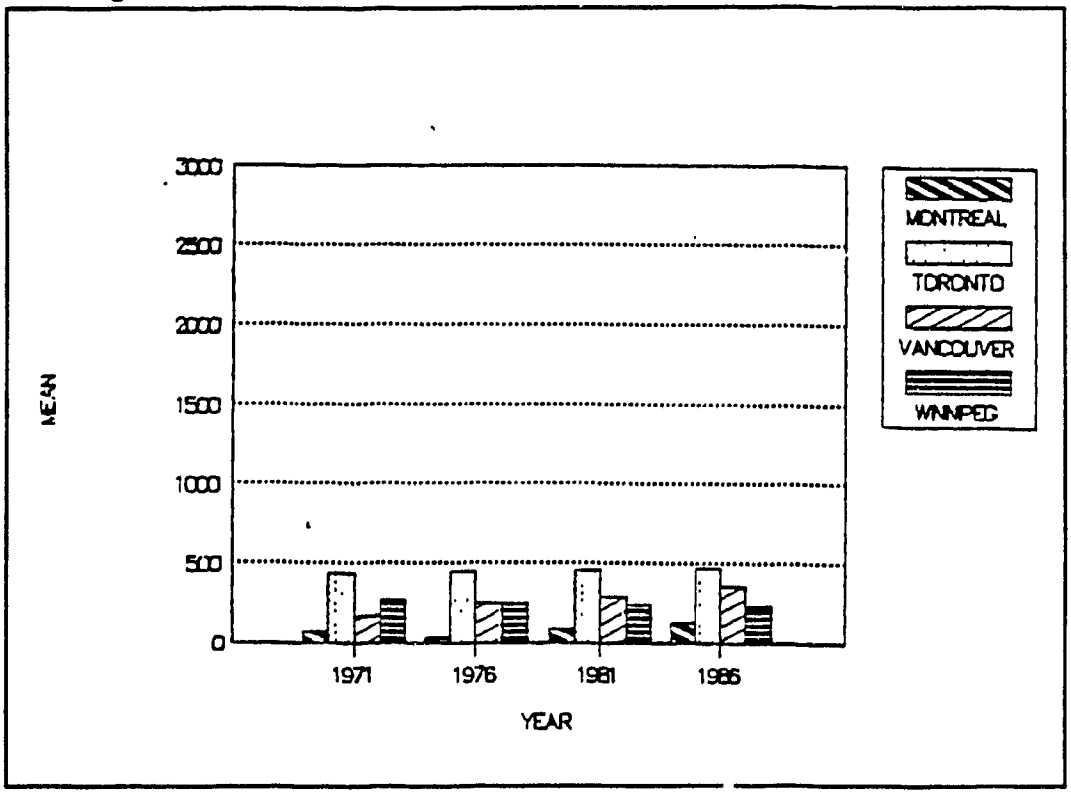
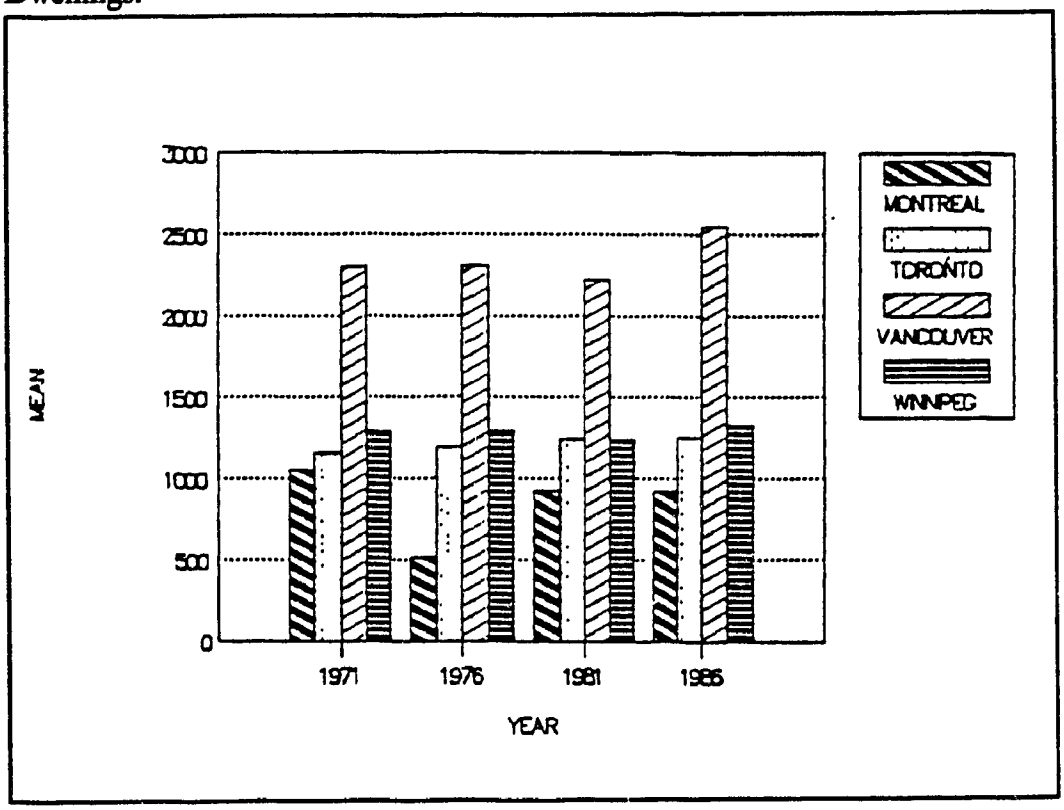


Figure 28: Mean Values for Core Neighbourhoods, Number of Rented Dwellings.



compared to the other selected centres. In terms of rented housing, the location quotients suggest a very high concentration in core neighbourhoods relative to the outer city and CMA, and this fact is also similar for all the cities considered in the study.

In terms of the value of dwellings (Figure 31), it is clear that in all cities, increases have occurred in the core and outer city, as well as the CMA. Moreover, the rates of growth are very high. For Toronto, core neighbourhoods has experienced the most rapid change (448.1%) overall (see Tables 1 to 4).

In terms of the demand for housing, it is very clear that the incidence of rented dwellings is much higher than the incidence of owned dwellings. This is explained by the number of high rise, high density residential buildings in core

Figure 29: LQ's for Core Neighbourhoods, Number of Owned Dwellings.

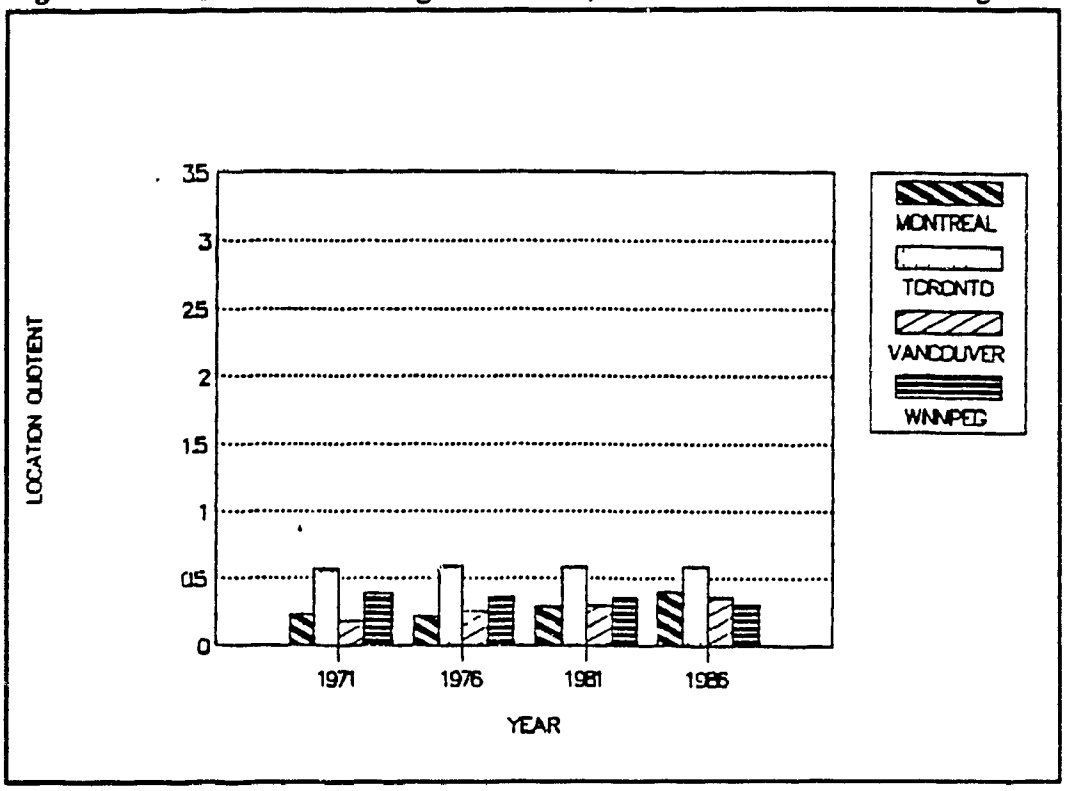


Figure 30: LQ's for Core Neighbourhoods, Number of Rented Dwellings.

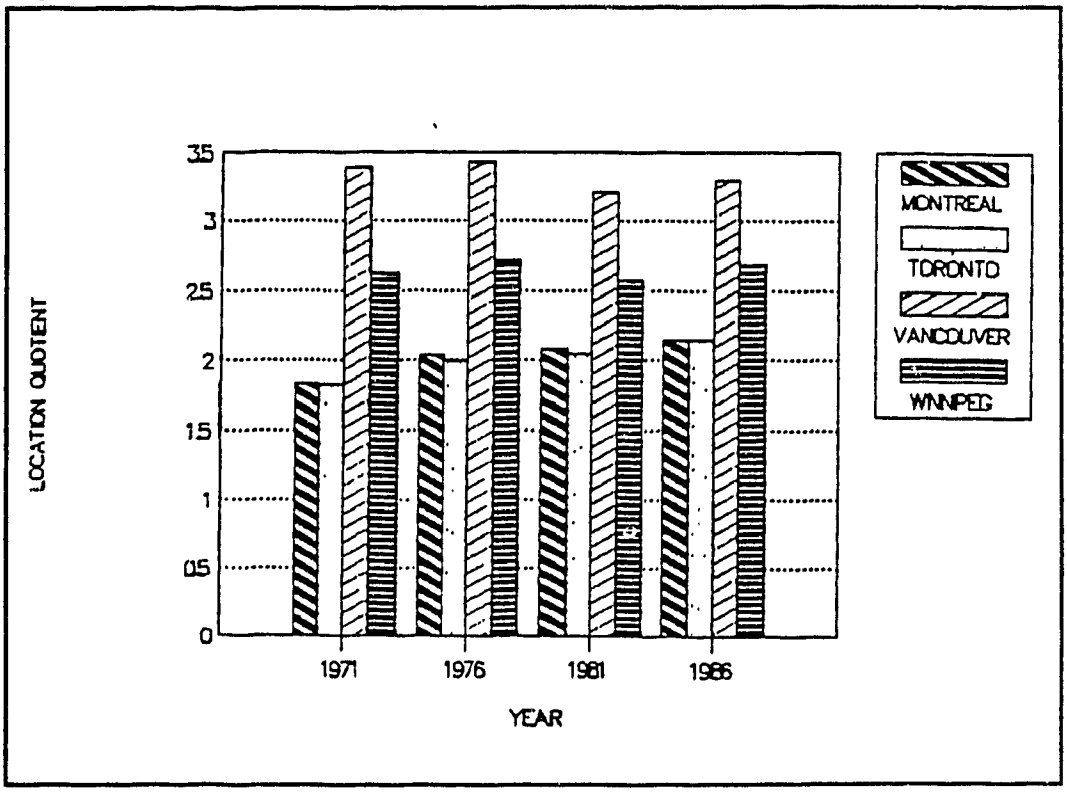


Figure 31: Mean Values for Core Neighbourhoods, Dwellings Built Before 1946.

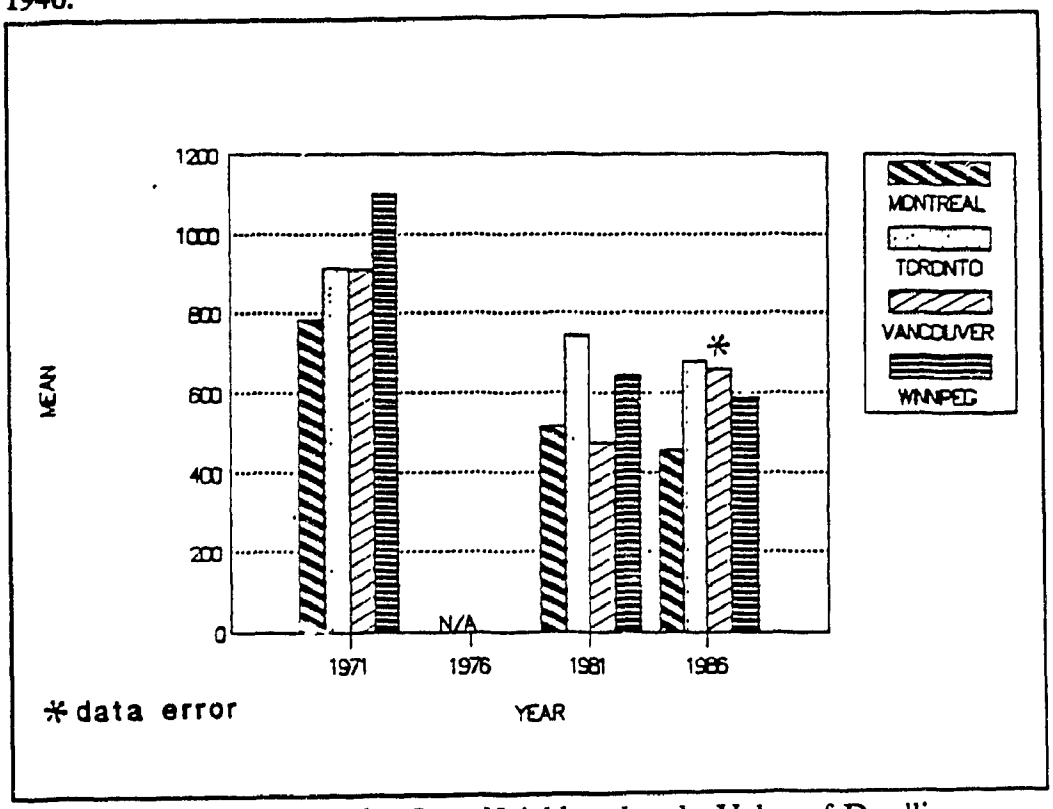
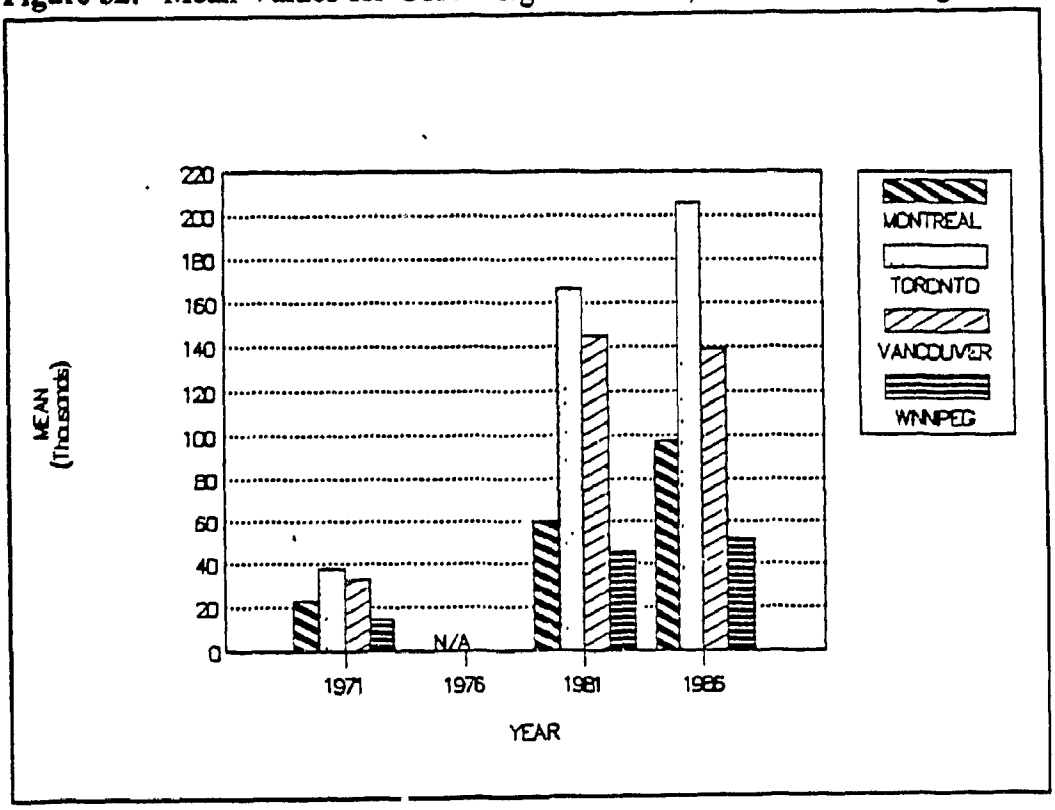


Figure 32: Mean Values for Core Neighbourhoods, Value of Dwelling.



neighbourhoods, since this type of housing can easily fulfill an increased demand. In the case of owned dwellings, the concentration in core neighbourhoods is small. This can be easily explained by the fact that the existing housing stock, which has been depleted over time by the construction of higher density housing and other land uses, was small to begin with, when compared to the expanding peripheries of the contemporary city. In addition, the results for the value of dwellings indicate similarity in core neighbourhoods and the outer city, as well as the CMA. Thus, although housing values are increasing in all areas, the inner city do not emerge as distinct, and hence, the results do not support an inner city housing demand which is much higher than any other area. In Winnipeg, the value of housing in the core is much lower than the other centres, which shows that the core neighbourhoods are not capable of competing with the suburban areas in attracting residents that will invest in highly priced houses. As for the pre-1946 housing stock (Figure 28), it is clear that all cities have experienced losses in the past fifteen years, with core neighbourhoods in Montreal and Winnipeg having the most rapid decline overall.

OUTLIERS: CHANGES IN THE DEMAND FOR HOUSING

The variability of owned dwellings is relatively small between 1971 and 1986 in core neighbourhoods in Montreal (Tables 13 to 16). Thus, there are few differences between census tracts and the dispersion is relatively even. For rented dwellings, the variability is higher, thus some tracts may have an abundance of rented dwellings, while some do not. In addition, the variability of owned and

rented dwellings remains relatively unchanged over time. For housing built before 1946, the variation between census tracts remains very high during the given time period. This is not surprising since older housing, which has been affected by changes in land use over time, is likely to be very unevenly distributed between census tracts. In all cases, there are more positive than negative outliers, and this has remained unchanged over time. Although owned housing has a very low concentration in core neighbourhoods of Montreal, when compared to the CMA, there are some tracts which have a higher concentration, and are thus considered extreme. These tracts are located in the southwest (Tract 74), to the north (Tract 128), and later to the east and northeast (Tracts 61, 134, 135, 140 and 141). Negative outliers are located adjacent to the core (Tracts 57, 60, 62 and 65, see Fig. 1). Positive outliers for rented dwellings are generally located adjacent to the core (Tracts 59 and 63 to 65), to the north (Tracts 128 to 132), and to the east (Tract 49). Negative outliers for rented dwellings tend to be adjacent to the core (Tracts 57, and 62 to 69), and to the southwest (Tracts 74 and 77, see Fig. 1). However, it should be noted that these negative outliers are still above 1, which implies a higher proportion of rented dwelling in these tracts, when compared to the CMA. In general, the quotient values (Tables 13 to 16) for rented dwellings remain relatively the same over time, and thus shows neither a strengthening or weakening trend. Owned housing, however, does seem to strengthen over time, as many tracts have higher concentrations than in the past.

In Toronto, the incidence of owned dwellings shows little variation between census tracts over time (Tables 17 to 20). For rented dwellings, the amount of variation is higher and has increased slightly over time. Thus, the differences

between census tracts are greater for rented housing than owned housing. For dwellings constructed before 1946, the variation, while relatively moderate in 1971, increases steadily over time. This is likely the result of new construction in the inner city at the expense of some of the older existing structures. In the case of owned housing, the number of positive and negative outliers increases over time. Between 1971 and 1976, negative outliers exceed positive outliers. However, by 1986, the opposite is true. For rented dwellings, while positive outliers tend to exceed the negative ones, negative outliers are on the increase. Thus, more tracts are becoming unavailable for rental accommodation. Negative outliers for owned housing tend to remain in the same area over time. They can be found adjacent to the core (Tracts 35, and 61 to 65), and to the south (Tract 31, see Fig. 2). In 1971, two tracts in the northeast end of the inner city (Tracts 86 and 125), had concentrations of owned dwellings which were considered high enough to be extreme. In 1976, this expanded to some neighbouring tracts (67 and 87). By 1986, Tracts 88, 89, 120, and 121 are added as positive outliers. The highest concentration of rented dwellings can be found adjacent to the core in Tracts 62 to 65, and Tract 124 in the north (Fig. 2). Negative outliers tend to change from year to year, but by 1986 include Tracts 40 and 41 in the southwest, and 93 and 94 in the west. Finally, while there are no dramatic changes for either owned or rented housing (Tables 17 to 20), some tracts appear to be strengthening over time.

In Vancouver, the variability of owned housing is low, thus indicating few differences between census tracts (Tables 21 to 24). Rented housing, on the other hand, is very high but decreases dramatically by 1986. Thus, rental accommodations are becoming more evenly dispersed in core neighbourhoods. For dwellings built

before 1946, the variability is fairly moderate in 1971. However, after 1971, this variability increases dramatically, likely as a result of losses due to new construction. For both owned and rented dwellings, the number of outliers remains generally unchanged over time. In the case of owned housing, there are positive outliers but no negative counterparts, whereas the opposite is true for rented housing. Positive outliers for owned housing are generally located in the south (Tracts 39 and 48) in 1971 (Fig. 3). After 1976 they can be seen west of the core in Tracts 62 to 65 and south of False Creek (Tract 49). For rented housing, negative outliers are located in Tracts 57 to 59, in the northeast part of the inner city. In the case of owned housing, many tracts appear to strengthen in value over time (Tables 21 to 24). Thus, the concentration of owned housing is increasing in many areas of core neighbourhoods. Rented housing, on the other hand, has shown some decreases over time, and although the quotient values are still very high when compared to the CMA, they are not as extreme as they were in the past.

In Winnipeg, the variability of owned dwellings is low and relatively unchanged over time (Tables 25 to 28). Thus, most census tracts are very similar with regard to this variable. Rented dwellings have a very high variation between census tracts and this variation increases slightly over time. For dwellings built before 1946, the variation between tracts is relatively moderate and unchanging during the given time period. The number of positive and negative outliers for both types of housing tends to fluctuate from year to year, however negative outliers are more dominant for owned housing, and positive outliers more dominant for rented housing. In the case of owned dwellings, Tract 27, in the west end of the inner city, emerges as the only positive outlier (Fig. 4). Negative outliers, which include Tracts

13 and 14 (and 23 in 1976), are located just south of the core. For rented dwellings, positive outliers are located in Tracts 13 and 14, to the south of the core. The only negative outlier is Tract 35 at the north end of the inner city (Fig. 4), which emerges in 1976, but then disappears as an outlier by 1981. In terms of the actual values of the location quotients (Tables 25 to 28), results for owned dwellings fluctuate slightly but remain relatively stable over time. Rented dwellings also fluctuate, but some tracts have weakened slightly over time.

SUMMARY OF TRENDS

To summarize, the theory presented in the previous chapter suggests that due to social, demographic, and economic factors, the idea of living in the inner city is attractive to a particular high status population, and that the decision to live in the inner city could be a reflection of the needs of the contemporary household, and particularly the contemporary woman.

The results of this research show several patterns to be emerging in core neighbourhoods in Montreal, Toronto, Vancouver, and Winnipeg. In general, core neighbourhoods contain a higher concentration of young males, individuals with university degrees, male and female professional occupations, and renters, when compared to the surrounding CMA. In addition, variables such as young males, university degrees, male professionals, and renters are found to be either stable or increasing in concentration in the four centres over the fifteen year time period.

In terms of females, it is interesting that the results show a fairly even distribution of young females, and working women throughout core neighbourhoods and the remaining CMA. Further, these two variables are shown to be either relatively stable or slightly decreasing over time. In the case of female professionals, the findings indicate a higher concentration in core neighbourhoods relative to the CMA. However, this concentration has generally declined since 1971.

Another interesting finding relates to the incidence of small families (0 to 2 children). Over the past fifteen years, it can be seen that families with 0 to 2 children have been declining in core neighbourhoods relative to the rest of the CMA. Although the highest concentration pertains to childless families, these results indicate a fairly even distribution throughout the inner city and surrounding CMA. In the case of families with 1 or 2 children, the concentration is very low in core neighbourhoods when compared to the CMA.

In terms of the demand for housing, the results indicate a very low degree of home ownership in core neighbourhoods, while the proportion of rented dwellings is extremely high.

Overall, the traditional definition of a gentrifying population includes males and females who are young, highly educated professionals, and have few or no children, and who generally obtain an inner city residence with the purpose of renovation in mind. However, in terms of this research, only the results of the variables for young males, male professionals, and university degrees would support this definition. In addition, the findings for the female variables, because of their overall decline in core neighbourhoods, do not lend support to the hypothesis that working women, professional females tend to concentrate in the inner city. While it

is not the intention of this researcher to undermine the importance of contemporary women in the decision-making process, it is concluded that these decisions are being made everywhere in a typical city. Therefore, the selection of the inner city as a place of residence, and as a logical solution to the working woman's needs, does not seem as important as was hypothesized. Thus, while a variety of social, demographic, and economic factors affect the needs and choices of the contemporary household, and the contemporary woman, the results of this research indicate that core neighbourhoods can not compete as well as other areas as the answer to the complicated problems of modern day society.

On the other hand, core neighbourhoods does contain a large number of people who are young, single, and many of whom are university oriented. Thus, by choosing to live in the inner city, are likely reflecting a different set of needs than the ones described in this thesis.

A final note pertains to the differences between the four selected urban centres. In general, the results indicate that the highest proportion of the above mentioned gentrifying variables can be seen in Vancouver and Toronto, although Montreal is fairly close behind. Winnipeg, on the other hand, seems to fall furthest behind in the areas of university degrees, male and female professional occupations, and the value of dwellings, thus indicating that the inner city is not attractive to the same degree as other areas in the CMA. In addition, it should be noted that some homogeneity has been observed throughout the inner and outer city, which indicates that the core areas of the Canadian centres selected for this thesis can not be characterized by decay or deterioration. Hence, where the largest CMAs are concerned, core neighbourhoods still holds some degree of attractivity for a

population interested in the benefits of urban living. However, in cities which are the size of Winnipeg or smaller, or at a similar lower stage of development, it is possible that this degree of attractiveness is lessened even further, as the results show.

While the examination of the inner city as a whole has provided several interesting patterns of change over time, the analysis of individual location quotients and their respective outliers allows the researcher to gain a clearer, more detailed picture of emerging trends within core neighbourhoods itself. One trend, which is similar for all centres, is that outliers tend to cluster together in specific spatial areas, or groups of census tracts (see Figures 33-48). In addition, positive and negative outliers tend to separate themselves in different parts of the inner city. The only exception is rented dwellings for Montreal, where both types of outliers can be found in the same area, although in different tracts. A third trend is that in all centres, one common area containing positive outliers is located in census tracts which are adjacent to the CBD, or the central core of the inner city.

In Montreal, areas with extremely high concentrations of the specified gentrifying variables are located either adjacent to the urban core, or throughout the north and northeast portions of the inner city. Areas with lower concentrations are usually found in the southern half of the inner city. One reason for this split is due to the fact that in the south, especially the southeast, the predominant land use is likely that of heavy industry (see Fig. 1). Thus, residential tracts near this area are not likely to be considered as attractive as other areas, and the aesthetic value and quality of housing stock is lower than in zones to the north.

In Toronto, higher concentrations of gentrifying variables can be found in tracts adjacent to the core, and to the north and northeast. Conversely, areas considered to have negative outliers are located in the southeastern and southwestern part of the inner city. These tracts, considered negative, are likely the result of close proximity to areas that were once heavy industry, and also that many tracts are now less available for residential use due to the invasion of other land uses, such as commercial.

In Vancouver, most of the highly concentrated areas are in census tracts adjacent, or to the west of the CBD, or to the south of False Creek. Thus, these areas are likely to contain the choicest housing, especially in the False Creek area, where extensive residential development has taken place (Ley 1987). Negative outliers, on the other hand, seem to cluster in the northeast part of the inner city, where much of the good housing is likely unavailable and/or unattractive to a population interested in gentrification.

In Winnipeg, census tracts just to the south of the urban core and some tracts to the northwest, contain the highest proportion of gentrifying variables. Conversely, areas to the north and northeast contain the lowest proportion of these variables, likely due to the existence of land uses other that residential.

In all centres, areas with extremely high concentrations of the specified variables when compared to the CMA, are likely the result of high density, multi-level housing, such as condominiums. This conclusion seems reasonable since single-family dwellings and the like are in relatively small supply when compared to the peripheral areas of the CMA, and thus could not be the sole reason for such extreme concentrations of a gentrifying population.

Differences between variables and cities seem to stem from their strengthening or weakening over time. These differences might be explained by the uniqueness of each centre and by the complexity of human behaviour (Choko and Harris 1990). In Montreal, outliers which strengthen over time relate to families with no children, owned dwellings, and tracts which had very low concentrations of working women. Outliers which weaken over time are those of families with 2 children and highly concentrated tracts of working females. Finally, stable outliers are those containing young males and females, families with 1 child, university degrees, professional occupations, and rented dwellings.

In Toronto, most outliers remain relatively stable. However, young males and females, families with no children and university degrees, tend to weaken over time. Owned and rented dwellings strengthen slightly during the given time period.

Outliers which strengthen in Vancouver are young males and females, and owned dwellings. Stable outliers include professional occupations and university degrees (although weakened slightly), and rented dwellings. Families with 0 to 2 children and working females weaken over time.

Finally, in Winnipeg, outliers which weaken are families with 0 to 2 children, and university degrees, whereas young males and females tend to strengthen. The other variables remain relatively stable over time.

It should be noted, that even though some outliers weaken over time, in most cases, the concentration is higher in core neighbourhoods when compared to the CMA. Thus, when core neighbourhoods are examined in greater detail, through individual location quotients, it is clear that some areas are attracting what has been defined as a gentrifying population. Further, while the majority may not actually be

utilizing their own 'sweat equity' to revitalize an older home, they are still choosing the inner city as a place of residence. Hence, whether the choice involves a renovated house, or a high-rise condominium, gentrification of core neighbourhoods is still the result (Ley 1985). Moreover, by looking at individual location quotients, these areas can be easily identified and examined in greater detail than by considering the inner city as a whole. However, it should be noted that by examining the inner city as one area, the researcher may put any patterns or changes in the context of other patterns and changes occurring in the rest of the CMA. This is an important aspect of research since it allows the researcher to determine the extent or importance to which a process like gentrification occurs in modern day society.

With regard to the overall findings of this research, other studies have shown similar results. Ley (1988) indicates that both "housing renovation (gentrification in the strict sense) and redevelopment" (pp. 31) has led to the social upgrading of selected inner city neighbourhoods. In addition, Ley (1985) postulates that the reshaping of central city housing for higher income households involves a variety of forces. In other words, gentrification is not simply a result of housing renovation, but also deconversion, condominium conversion, and redevelopment (Ley 1985). Another important aspect of the gentrification issue, which agrees with the opinion of this researcher, is that the essential criterion for understanding gentrification is the social status of the household rather than the nature of the housing stock (Ley 1988, pp. 43).

A final point concerns the variations of gentrifiers in core areas. The work of Ley (1985, 1988) not only corroborates some of the findings and theories

discussed in this thesis, but also, sheds more light on the reasons behind the selection of some census tracts for social upgrading, while at the same time, other tracts are excluded from the process. Generally, there are six factors which are important in explaining variations in core areas. These are centrality (proximity to elite areas, work, and downtown), environmental amenity, neighbourhood character, historical status, affordability, and investment potential (Ley 1985). Thus, these trends seem to endorse the idea of gentrification as as complex and varied phenomenon, and which seems to reflect ongoing changes in the social fabric of a modern society.

TABLE 1: MEANS AND GROWTH COEFFICIENTS, MONTREAL

MONTREAL	1971	1976	1981	1986	GROWCT		GROWCITY		GROWCMA	
POP71	3014.6	1370.9	2104.1	2020.8	-33.0		-14.2		24.7	
M25-34	256.6	129.9	242.2	261.6	2.0		13.5		40.9	
F25-34	220.2	108.5	199.9	212.3	-3.6		12.9		45.2	
NOCHILD	211.1	103.0	161.2	163.3	-22.7		-0.5		71.0	
CHILD1	123.5	61.1	113.6	59.2	-52.0		-29.2		41.3	
CHILD2	91.9	42.9	71.3	46.2	-49.8		-27.4		48.4	
UDEGREE	108.5	208.1	303.4	372.8	243.5		313.2		348.1	
FPRATE	39.3	20.2	47.9	55.1	15.9		11.2		15.8	
MMAN	44.7	N/A	76.2	85.3	91.0		75.7		140.7	
MTEACH	33.9	N/A	38.0	37.0	9.0	45.5	28.0	51	52.8	83
MMED	24.4	N/A	30.9	28.8	17.9		45.5		80.0	
MTECH	67.6	N/A	93.8	111.1	64.3		54.8		58.6	
FMAN	21.2	N/A	44.0	53.7	153.0		342.8		706.0	
FTEACH	32.9	N/A	35.0	34.5	4.7	54.7	28.2	169.4	70.5	326.2
FMED	63.8	N/A	48.5	46.7	-26.7		36.9		178.8	
FTECH	38.7	N/A	61.6	72.8	87.9		269.8		349.6	
MMEDINC	3941.7	N/A	8741.6	12248.4	210.7		183.2		223.0	
FMEDINC	2343.8	N/A	6384.7	9646.7	311.6		247.8		284.7	
MEDFINC	6261.8	N/A	15504.5	23168.1	270.0		240.9		271.2	
MEDHINC	5185.4	N/A	11203.9	16940.2	226.7		182.1		227.5	
TOTALO	72.4	35.3	90.4	136.2	88.0		46.9		84.9	
TOTALR	1049.2	519.5	927.6	916.2	-12.7		6.2		41.2	
VALDWELL	22756.8	N/A	59580.3	97551.8	328.7		371.3		368.6	
E1946	781.2	N/A	514.6	455.8	-41.7		-11.0		-11.8	

TABLE 2: MEANS AND GROWTH COEFFICIENTS, TORONTO

TORONTO	1971	1976	1981	1986	GROWCT		GROWCITY		GROWCMA	
POP71	4751.5	4173.4	4018.3	3995.8	-15.9		-14.9		47.0	
M25-34	474.9	470.0	461.4	483.0	1.7		12.8		72.7	
F25-34	419.9	426.1	444.0	462.7	10.2		25.7		80.2	
NOCHILD	397.0	332.7	328.8	317.0	-20.1		-16.3		61.7	
CHILD1	210.3	203.8	205.4	126.6	-39.8		-31.7		37.5	
CHILD2	162.9	155.4	152.4	116.4	-26.5		-19.6		54.9	
UDEGREE	245.2	258.6	741.4	915.9	273.6		425.1		568.3	
FFRATE	53.6	53.3	62.8	65.9	12.3		11.6		14.5	
MMAN	99.9	N/A	185.0	215.2	115.4		138.1		188.8	
MTEACH	50.2	N/A	54.9	54.1	7.7	43.5	46.6	71	55.3	99.8
MMED	38.6	N/A	44.0	40.9	6.0		25.1		68.5	
MTECH	173.1	N/A	224.0	250.4	44.7		74.3		86.7	
FMAN	39.8	N/A	112.4	155.4	291.0		531.7		756.2	
FTEACH	68.2	N/A	65.1	63.0	-7.7	101.2	47.6	215.5	103.2	328.5
FMED	109.4	N/A	91.7	92.4	-15.5		23.5		142.9	
FTECH	68.5	N/A	136.7	162.6	137.4		259.2		311.6	
MMEDINC	5566.6	N/A	14378.4	20926.2	275.9		219.6		218.5	
FMEDINC	3006.0	N/A	9010.7	14103.4	369.2		308.2		328.6	
MEDFINC	8870.7	N/A	22313.1	34084.9	284.2		303.8		281.5	
MEDHINC	8470.7	N/A	19013.0	29774.4	251.5		231.1		246.6	
TOTALO	434.7	443.7	458.0	475.5	9.4		4.7		81.0	
TOTALR	1153.2	1193.7	1242.3	1249.4	8.3		20.1		59.0	
VALDWELL	37649.9	N/A	166462.5	206372.3	448.1		347.4		339.0	
B1946	913.5	N/A	741.5	677.2	-25.9		-14.5		-5.1	

TABLE 3: MEANS AND GROWTH COEFFICIENTS, VANCOUVER

VANCOUVER	1971	1976	1981	1986	GROWCT		GROWCITY		GROWCMA	
POP71	5152.5	4729.8	4422.7	4631.2	-10.1		1.2		44.7	
M25-34	1024.4	596.3	639.7	668.6	-34.7		48.0		78.8	
F25-34	469.4	527.8	568.9	635.6	35.4		55.9		85.7	
NOCHILD	633.4	514.1	458.3	471.7	-25.5		-5.9		83.2	
CHILD1	191.6	165.6	159.2	84.4	-55.9		-16.8		41.3	
CHILD2	88.8	66.3	70.0	53.4	-39.8		-4.2		50.9	
UDEGREE	174.4	442.3	631.4	801.9	359.9		363.5		511.5	
FPRATE	58.1	55.8	64.0	64.4	6.3		12.5		15.9	
MMAN	74.7	N/A	166.9	222.6	198.4		109.3		268.2	
MTEACH	25.7	N/A	37.2	50.7	90.0	100.9	23.2	64.5	57.1	125.3
MMED	36.3	N/A	46.9	55.9	54.0		49.7		72.8	
MTECH	153.4	N/A	215.8	247.2	61.1		75.9		103.1	
FMAN	36.3	N/A	106.9	168.1	363.6		490.9		1107.8	
FTEACH	52.8	N/A	69.7	64.7	22.5	137.3	42.1	216.6	113.1	441.3
FMED	182.3	N/A	146.4	143.2	-21.4		93.5		156.2	
FTECH	49.3	N/A	97.5	140.3	184.3		239.9		388.0	
MMEDINC	4733.9	N/A	12511.3	15924.4	236.4		179.5		214.8	
FMEDINC	2954.6	N/A	9310.8	12730.8	330.9		332.6		382.9	
MEDFINC	7239.9	N/A	20919.4	28051.8	287.5		259.2		283.3	
MEDHINC	5603.8	N/A	14475.3	19864.0	254.5		212.1		245.4	
TOTALO	175.3	252.5	290.0	357.5	103.9		4.5		68.0	
TOTALP	2299.1	2305.9	2214.4	2551.7	11.0		37.4		102.2	
VALDWELL	32787.5	N/A	144620.5	138749.9	323.2		477.3		376.8	
B1946	910.9	N/A	472.2	657.5	-27.8		-20.7		-27.6	

TABLE 4: MEANS AND GROWTH COEFFICIENTS, WINNIPEG

WINNIPEG	1971	1976	1981	1986	GROWCT		GROWCMA	
POP71	3691.8	3399.3	3140.8	3330.0	-14.4		19.1	
M25-34	294.8	306.8	298.2	369.6	25.4		59.9	
F25-34	256.4	294.6	290.4	322.9	25.9		65.4	
NOCHILD	367.9	284.3	227.1	220.7	-40.0		34.7	
CHILD1	175.0	166.4	170.4	96.4	-44.9		12.5	
CHILD2	106.4	91.4	100.7	83.1	-21.9		29.2	
UDEGREE	87.6	95.0	214.3	241.4	175.5		364.6	
FFRATE	48.3	44.2	49.3	49.4	1.1		12.7	
MMAN	35.0	N/A	57.3	59.2	69.0		131.5	
MTEACH	28.3	N/A	25.0	17.9	-37.0	18.3	42.7	72.1
MMED	25.4	N/A	27.1	36.4	43.1		53.1	
MTECH	72.1	N/A	70.4	70.7	-2.0		60.9	
FMAN	16.7	N/A	36.5	33.5	100.8		493.9	
FTEACH	41.0	N/A	33.0	27.1	-33.9	19.1	64.2	239.3
FMED	111.4	N/A	77.3	62.9	-43.6		124.9	
FTECH	34.5	N/A	40.4	52.9	53.0		274.9	
MMEDINC	3885.6	N/A	8380.6	10256.5	164.0		238.3	
FMEDINC	2203.3	N/A	5726.7	8584.0	289.6		378.5	
MEDFINC	6129.2	N/A	14823.1	18182.5	196.7		285.6	
MEDHINC	5103.1	N/A	10264.1	13088.6	156.5		241.4	
TOTALO	272.5	246.4	240.4	236.1	-13.4		48.5	
TOTALR	1288.9	1291.8	1237.1	1324.3	2.7		48.0	
VALDWELL	14511.3	N/A	45426.9	51475.7	254.7		337.8	
B1946	1101.4	N/A	642.9	585.4	-46.9		-16.7	

TABLE 5: LOCATION QUOTIENTS FOR MONTREAL, INNER CITY/CITY

MONTREAL	LQCITY71		LQCITY76	LQCITY81		LQCITY86	
M25-34	1.13		1.31	1.31		1.28	
F25-34	1.00		1.09	1.12		1.08	
NOCHILD	0.87		0.92	0.84		0.87	
CHILD1	0.73		0.71	0.73		0.62	
CHILD2	0.64		0.62	0.63		0.53	
UDEGREE	1.58		3.24	1.85		1.85	
FPRATE	0.95		0.92	0.95		1.05	
MMAN	0.87		N/A	1.24		1.37	
MTEACH	1.28	1.19	N/A	1.54	1.48	1.73	1.60
MMED	1.28		N/A	1.55		1.54	
MTECH	1.32		N/A	1.59		1.78	
FMAN	1.40		N/A	1.34		1.37	
FTEACH	1.01	1.44	N/A	1.19	1.32	1.26	1.36
FMED	1.32		N/A	1.03		1.04	
FTECH	2.03		N/A	1.75		1.77	
TOTALO	0.38		0.37	0.47		0.60	
TOTALR	1.32		1.38	1.35		1.39	

TABLE 6: LOCATION QUOTIENTS FOR MONTREAL, INNER CITY/CMA

MONTREAL	LQCMA71		LQCMA76	LQCMA81		LQCMA86	
M25-34	1.12		1.26	1.33		1.41	
F25-34	0.95		1.00	1.06		1.12	
NOCHILD	1.01		1.05	0.93		0.93	
CHILD1	0.77		0.75	0.74		0.53	
CHILD2	0.57		0.51	0.48		0.36	
UDEGREE	1.50		2.98	1.97		2.09	
FPRATE	1.03		0.95	0.94		1.02	
MMAN	0.59		N/A	0.83		0.97	
MTEACH	1.16	1.05	N/A	1.52	1.44	1.82	1.63
MMED	1.34		N/A	1.80		1.83	
MTECH	1.11		N/A	1.61		1.93	
FMAN	1.53		N/A	1.31		1.31	
FTEACH	0.89		N/A	1.10		1.19	
FMED	1.67	1.62	N/A	1.14	1.45	1.09	1.47
FTECH	2.39		N/A	2.24		2.27	
TOTALO	0.23		0.21	0.28		0.39	
TOTALR	1.83		2.04	2.08		2.15	

TABLE 7: LOCATION QUOTIENTS FOR TORONTO, INNER CITY/CITY

TORONTO	LQCITY71		LQCITY76	LQCITY81		LQCITY86	
M25-34	1.15		1.15	1.11		1.08	
F25-34	1.10		1.09	1.04		1.02	
NOCHILD	0.95		0.96	0.97		0.92	
CHILD1	0.85		0.83	0.85		0.78	
CHILD2	0.80		0.80	0.78		0.74	
UDEGREE	1.48		1.43	0.53		1.27	
FFRATE	1.02		1.02	1.04		1.03	
MMAN	1.20		N/A	0.31		1.14	
MTEACH	1.50	1.39	N/A	0.49	0.44	1.31	1.26
MMED	1.46		N/A	0.51		1.35	
MTECH	1.38		N/A	0.46		1.24	
FMAN	1.32		N/A	0.41		1.09	
FTEACH	1.28	1.40	N/A	0.36	0.45	1.02	1.14
FMED	1.45		N/A	0.39		1.17	
FTECH	1.56		N/A	0.63		1.26	
TOTALO	0.70		0.71	0.69		0.73	
TOTALR	1.32		1.34	1.30		1.25	

TABLE 8: LOCATION QUOTIENTS FOR TORONTO, INNER CITY/CMA

TORONTO	LQCMA71		LQCMA76	LQCMA81		LQCMA86	
M25-34	1.30		1.32	1.31		1.34	
F25-34	1.16		1.17	1.18		1.22	
NOCHILD	1.05		1.01	0.98		0.94	
CHILD1	0.78		0.76	0.75		0.61	
CHILD2	0.58		0.57	0.54		0.46	
UDEGREE	2.01		2.06	2.02		2.08	
FFRATE	1.09		1.02	1.04		1.03	
MMAN	0.89		N/A	1.01		1.07	
MTEACH	1.54	1.44	N/A	1.75	1.62	1.84	1.69
MMED	1.83		N/A	2.01		2.02	
MTECH	1.48		N/A	1.70		1.84	
FMAN	1.58		N/A	1.53		1.48	
FTEACH	1.32	1.81	N/A	1.27	1.69	1.16	1.59
FMED	1.97		N/A	1.42		1.34	
FTECH	2.35		N/A	2.53		2.39	
TOTALO	0.57		0.59	0.58		0.58	
TOTALR	1.83		2.00	2.05		2.14	

TABLE 9: LOCATION QUOTIENTS FOR VANCOUVER, INNER CITY/CITY

VANCOUVER	LQCITY71		LQCITY76	LQCITY81		LQCITY86	
M25-34	2.76		1.46	1.45		1.40	
F25-34	1.36		1.37	1.33		1.34	
NOCHILD	1.19		1.12	1.05		1.09	
CHILD1	0.74		0.62	0.62		0.47	
CHILD2	0.39		0.29	0.32		0.25	
UDEGREE	1.15		2.24	0.59		1.26	
FPRATE	1.22		1.14	1.13		1.07	
MMAN	0.89		N/A	0.34		1.35	
MTEACH	0.75	1.05	N/A	0.36	0.46	1.07	1.28
MMED	1.15		N/A	0.56		1.24	
MTECH	1.41		N/A	0.59		1.44	
FMAN	1.42		N/A	0.63		1.59	
FTEACH	1.15	1.55	N/A	0.38	0.56	1.02	1.35
FMED	2.16		N/A	0.58		1.28	
FTECH	1.48		N/A	0.66		1.49	
TOTALO	0.20		0.29	0.35		0.42	
TOTALR	2.34		2.33	2.18		2.22	

TABLE 10: LOCATION QUOTIENTS FOR VANCOUVER, INNER CITY/CMA

VANCOUVER	LQCMA71		LQCMA76	LQCMA81		LQCMA86	
M25-34	2.80		1.50	1.59		1.57	
F25-34	1.32		1.34	1.39		1.46	
NOCHILD	1.39		1.20	1.06		1.04	
CHILD1	0.73		0.60	0.57		0.39	
CHILD2	0.32		0.22	0.23		0.18	
UDEGREE	1.47		2.91	1.73		1.79	
FPRATE	1.34		1.18	1.14		1.09	
MMAN	0.82		N/A	0.98		1.16	
MTEACH	0.75	1.11	N/A	1.03	1.35	1.21	1.47
MMED	1.32		N/A	1.62		1.67	
MTECH	1.54		N/A	1.75		1.84	
FMAN	1.87		N/A	1.82		1.82	
FTEACH	1.22	1.91	N/A	1.07	1.61	1.04	1.59
FMED	2.55		N/A	1.64		1.39	
FTECH	1.99		N/A	1.91		2.09	
TOTALO	0.18		0.26	0.30		0.36	
TOTALR	3.39		3.44	3.21		3.30	

TABLE 11: LOCATION QUOTIENTS FOR WINNIPEG, INNER CITY/CITY

WINNIPEG	LQCITY71		LQCITY76	LQCITY81		LQCITY86	
M25-34	1.15		1.14	1.11		1.22	
F25-34	1.07		1.08	1.04		1.05	
NOCHILD	0.97		0.99	0.80		0.72	
CHILD1	0.83		0.80	0.82		0.60	
CHILD2	0.62		0.46	0.50		0.41	
UDEGREE	0.98		0.97	0.90		0.80	
FPRATE	1.01		0.92	0.86		0.83	
MMAN	0.53		N/A	0.46		0.39	
MTEACH	0.73	0.81	N/A	0.48	0.77	0.57	0.75
MMED	0.98		N/A	1.26		1.23	
MTECH	0.99		N/A	0.86		0.80	
FMAN	0.99		N/A	0.67		0.54	
FTEACH	0.80	1.19	N/A	0.60	0.85	0.50	0.72
FMED	1.71		N/A	1.05		0.79	
FTECH	1.25		N/A	1.06		1.04	
TOTALO	0.43		0.36	0.35		0.31	
TOTALR	1.84		2.65	2.50		2.57	

TABLE 12: LOCATION QUOTIENTS FOR WINNIPEG, INNER CITY/CMA

WINNIPEG	LQCMA71		LQCMA76	LQCMA81		LQCMA86	
M25-34	1.13		1.14	1.11		1.23	
F25-34	1.00		1.09	1.04		1.05	
NOCHILD	1.13		1.00	0.81		0.73	
CHILD1	0.86		0.80	0.83		0.60	
CHILD2	0.52		0.45	0.49		0.40	
UDEGREE	1.00		0.99	0.91		0.82	
FPRATE	1.04		0.93	0.87		0.83	
MMAN	0.39		N/A	0.46		0.39	
MTEACH	0.60	0.75	N/A	0.48	0.77	0.57	0.76
MMED	1.07		N/A	1.28		1.26	
MTECH	0.94		N/A	0.87		0.81	
FMAN	1.03		N/A	0.68		0.54	
FTEACH	0.74	1.29	N/A	0.60	0.85	0.50	0.72
FMED	1.98		N/A	1.05		0.79	
FTECH	1.41		N/A	1.07		1.06	
TOTALO	0.38		0.36	0.35		0.31	
TOTALR	2.63		2.71	2.57		2.69	

TABLE 13: OUTLIERS BY CENSUS TRACT FOR MONTREAL, 1971

	M25-34	F25-34	TOTALO	TOTALR	NOCHILD	CHILD1	CHILD2	DEGREE1	DEGREE2	FPRATE	MMAN	MTEACH	MMED	MTECH	FMAN	FTEACH	FMED	FTECH	B1946
M47																			
M51																			4.36
M52				2.66															4.67
M53		0.33																	5.64
M54																			4.29
M57			0.05		0.49	0.09													4.22
M58						0.37													
M59						0.38													
M60	0.37									0.34									
M61							0.13												
M62			0.05			0.28					2.45				6.06				
M63				2.64															4.61
M64	1.98	1.51		3.08		0.37	0.09		4.91	1.79				3.68	5.32			8.04	
M65	1.87	1.58	0.03	3.07			0.16	3.97		1.74	1.72			3.4	4.09			6.83	
M66							0.18												
M68	0.48				0.36	0.39													
M74			0.45																1.16
M127		1.68			1.71			5.09	4.6	1.58		6.57		2.69		3.58	5	7.62	
M128			0.65					5.16	4.4	1.62	2.72			2.59					
M129		1.37		2.52	2.1			6.53	4.2		3.57		3.94	3.15	6.59	2.14		7.26	1.52
M130				2.81		0.37		6.71	4.89	1.9		3.72	5.65	2.98			7.09	7.98	
M131		1.5		2.54				4.98		1.7			6.31	3.1				6.25	
M132	1.93	1.44		2.62					3.33	1.71							4.55		
M135			0.4																
M136							0.92												
M138							1.21												
M139						1.06													
M161						1.16													
M163							1.16												
M164						1.06	1.06												
STD	0.40	0.32	0.12	0.52	0.27	0.23	0.26	1.68	1.78	0.28	0.72	1.27	1.31	0.97	1.53	0.82	1.95	2.37	0.86
MEAN	1.05	0.84	0.22	1.78	0.93	0.73	0.55	1.20	1.34	1.03	0.55	1.26	1.48	0.97	1.78	0.92	1.54	2.40	2.99
LOWER	0.50	0.38	0.05	1.06	0.55	0.42	0.18	-1.15	0.60	0.50	-0.46	0.53	-0.35	-0.39	-0.37	-0.23	-1.20	0.92	1.78
UPPER	1.61	1.30	0.38	2.51	1.32	1.05	0.91	3.56	3.27	1.56	1.56	3.04	3.32	2.33	3.93	2.07	4.27	5.71	4.21

CT- census tract
STD- standard deviation
MEAN- average value
UPPER- MEAN+1.4*STD (upper boundary for outliers)
LOWER- MEAN-1.4*STD (lower boundary for outliers)

Figure 33: Spatial Distribution of Positive Outliers, Montreal 1971.

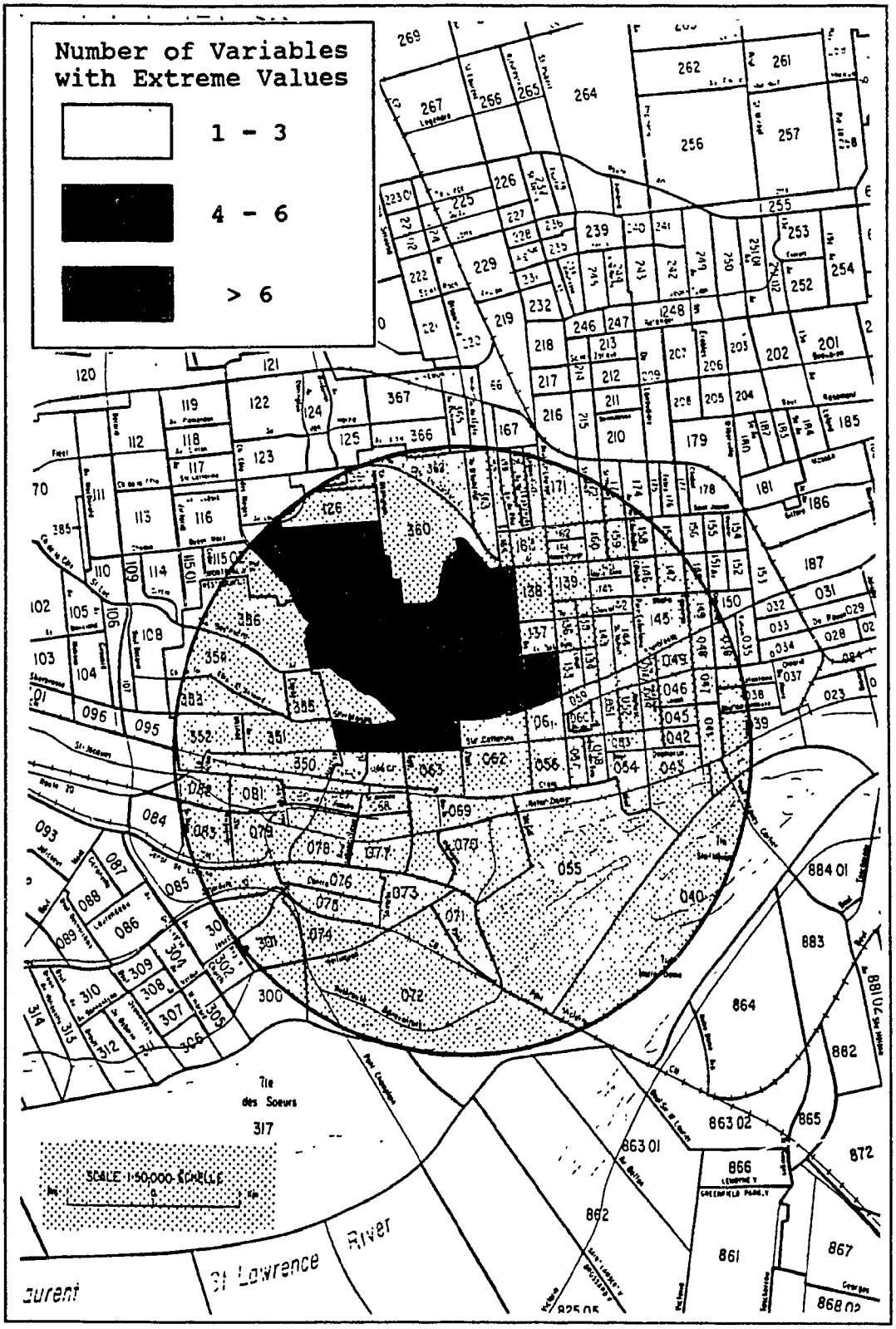


TABLE 14: OUTLIERS BY CENSUS TRACT FOR MONTREAL, 1976

	M25-34	F25-34	TOTALO	TOTALP	NOCHILD	CHILD1	CHILD2	MDEGREE	FDEGREE	FPRATE
M46										0.5
M51						0.35				
M53						0.27				0.44
M57		0.33				0.22				0.19
M58						0.35				
M59						0.27				
M60	0.39					0.34				
M61						0.27				
M63						0.27				
M64	2.48	1.47		3.3	1.49					1.56
M65	2.19	1.74		3.27	1.54				4.52	1.6
M66	1.97									
M68					0.3					
M70								11.26		
M73								10.09		
M74			0.46					10.72		
M75								11.27		
M78	0.5									
M81						1.12				
M127		1.6			1.55				6.27	
M128			0.76		1.51				6.28	
M129		1.44		2.77	2.2				6.47	
M130	2.34	1.72		2.86					5.39	1.54
M131	2.4	1.54		2.82	1.38				7.67	1.41
M132		1.38		2.87						
M136							0.99			
M138							1.08	9.8		
M139								11.51		
M140			0.39					11.85		
M141								11.24		
M142								11.87		
M143								11.21		
M144								10.78		
M160							1.1			
STD	0.48	0.34	0.13	0.55	0.22	0.25	0.27	4.24	1.62	0.31
MEAN	1.16	0.85	0.20	1.94	0.92	0.71	0.50	3.46	1.76	0.95
LOWER	0.51	0.37	0.01	1.18	0.47	0.76	0.11	-2.48	-0.92	0.52
UPPER	1.85	1.32	0.38	2.71	1.37	1.06	0.88	9.40	3.64	1.39

Figure 34: Spatial Distribution of Positive Outliers, Montreal 1976.

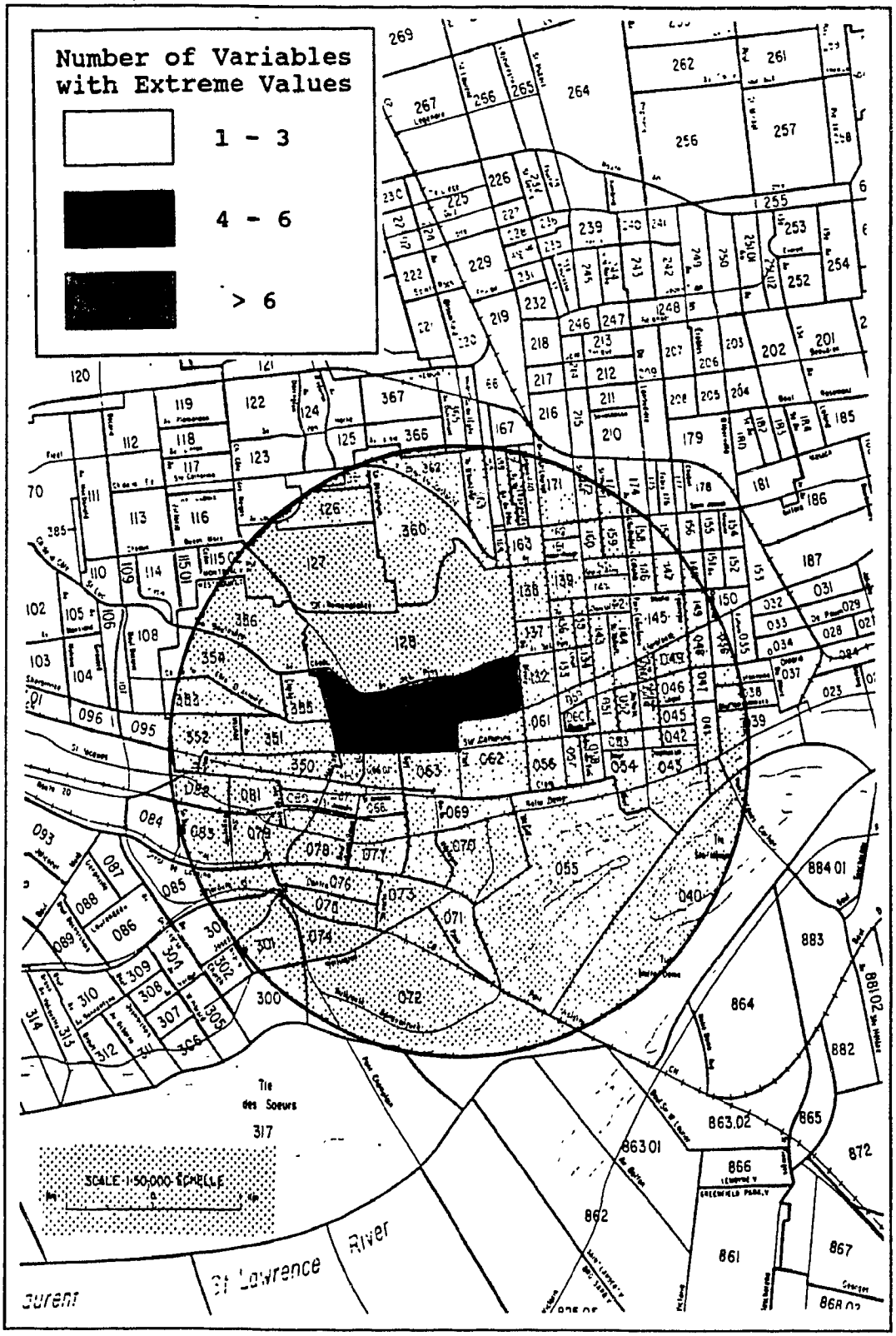


TABLE 15: OUTLIERS BY CENSUS TRACT FOR MONTREAL, 1981

	M25-34	F25-34	TOTALO	TOTALR	NOCHILD	CHILD1	CHILD2	UDEGREE	FPRATE	MMAN	MTEACH	MMED	MTECH	FMAN	FTEACH	FMED	FTECH	B1946
M42																	4.57	
M43		0.39				0.21												5.53
M53		0.46			0.31	0.28												
M54		0.36				0.3												
M56		0.21		1.18	0.23	0.17			0.45									
M57						0.29	0.08											
M58	2.31			2.81		0.29							3.56					7.16
M59	0.44		0.02			1.11			0.39									0.13
M60					1.24	0.23		4.51	1.22	1.73		5.12	5.21		3.32			7.49
M61						0.19												
M62				3.47					1.42				3.96	3.41				
M63	2.05	1.69	0.03						1.56	2.02				3.62				1.18
M64		1.52						3.59						3.62				
M65.1									1.34							3.07		
M65.2													3.22					
M66.1	0.58				0.23				0.52									
M66.2	2.29				0.27						6.23							
M68			0.49	1.29			0.93											
M69						1.14												
M74									0.53									
M75	0.68								0.49									
M76	0.52																	
M77						1.17												1.35
M78					1.42						4.17			2.83	3.1	3.33		
M81					1.33			5.22		1.95						2.37	4.71	
M127					1.72			4.98						4.48	2.38		4.64	1.56
M128	2.35	1.56		3.14		0.3		5.77	1.42			5.11			2.35	3.51		
M129	2.22			3.12				4.13			4.42	4.81	3.74					
M130				2.78														
M131		1.54	0.62							1.68				3.56	2.12		4.71	5.58
M132			0.54															
M134							1.05											
M135							0.97											
M136															2.04			
M138			0.52															
M140				1.28			0.99											
M141		1.62																
M163																		
M164																		
STD	0.44	0.24	0.16	0.51	0.28	0.27	0.26	1.41	0.27	0.66	1.25	1.78	1.10	1.10	0.68	0.86	1.66	1.37
MEAN	1.33	0.95	0.26	1.04	0.83	0.70	0.46	1.13	0.94	0.71	1.79	2.04	1.64	1.15	1.07	1.04	2.10	3.57
LOWER	0.71	0.47	0.04	1.32	0.44	0.32	0.07	0.55	0.56	0.13	0.05	0.45	0.19	-0.59	0.12	-0.16	0.22	1.64
UPPER	1.95	1.4	0.48	2.76	1.1	1.08	0.7	2.4	1.32	1.29	3.53	4.54	3.19	2.89	2.02	2.27	4.41	5.49

Figure 35: Spatial Distribution of Positive Outliers, Montreal 1981.

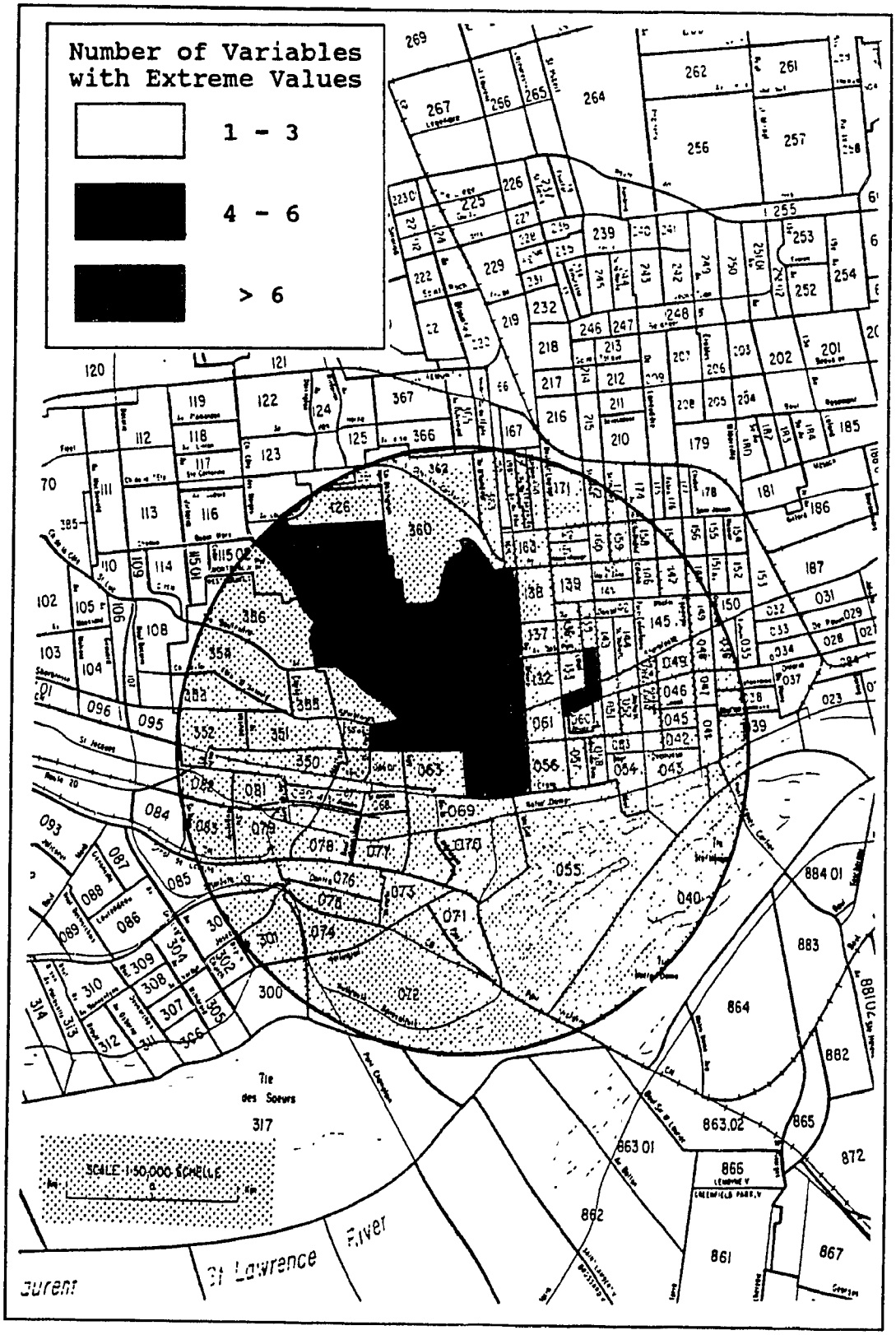


TABLE 16: OUTLIERS BY CENSUS TRACT FOR MONTREAL, 1986

	M25-34	F25-34	TOTALO	TOTALR	NOCHILD	CHILD1	CHILD2	UDEGREE	FFRATE	MMAN	MTEACH	MMED	MTECH	FMAN	FTEACH	FMED	FTECH	B1946
M42	2.23										1.59	4.78						
M43	2.16																	
M49				2.29														
M50				2.29														
M52																		
M53	0.75	0.28				0.19			0.45								0.34	
M54		0.55		1.27		0.09												
M57		0.31		1.09														
M58		0.62				0.12							0.17					
M59																		
M60	0.54	0.52	0.02															5.4
M61		1.5	0.98					4.96	1.67	2.99	4.52	9.18	4.97	2.67	2.88		0.22	
M62				1.25	0.43			4.26	1.66				7.92		2.81		4.34	7.14
M63					0.39													
M64				3.35						1.18								5.61
M65.1		1.51		3.41			0.07			1.93								
M65.2				3.05														1.01
M66.1																		
M66.2				2.88		0.18					3.63					1.96		
M68	0.74																	
M69	2.11			1.09	1.45				1.52	2.77		5.3	0.2					0.83
M73						0.82			0.58									
M74							0.65											
M75						0.83	0.63				0.14							
M76													0.07				0.25	
M77				1.27													0.38	
M78	0.85																0.17	
M79						0.82	0.62		0.61									0.78
M80																		
M81						0.85	0.64								2.43			
M127					1.32													
M128	0.81		0.85		1.39			3.95			4				2.48	2.94		
M129.1					1.66			4.57		2.77		6.1		3		2.75		
M129.2					1.7			4.79		2.57				2.87				
M130				2.3			0.09	4.63						3.88			4.63	
M131	2.02			3.03				3.99			5.03				2.73	1.97		
M134									1.54		3.59			2.54			4.14	5.37
M136						0.89												
M138						0.93												
M139							0.68											
M140			0.81															
M141		1.5	0.81												2.63		4.54	
M161							0.64											
M162		1.56																
M163							0.64										4.7	
M164		1.69																
														2.74	3.51	2.26	4.17	
STD	0.40	0.30	0.26	0.55	0.27	0.21	0.19	1.28	0.28	0.71	1.17	1.88	1.33	0.91	0.78	0.65	1.30	1.40
MEAN	1.45	1.07	0.40	2.05	0.86	0.52	0.35	1.89	1.02	0.92	1.90	2.08	2.06	1.23	1.21	0.92	2.22	3.36
LOWER	0.89	0.66	0.04	1.28	0.48	0.23	0.09	0.09	0.62	-0.08	0.27	-0.55	0.21	-0.04	0.12	0.01	0.40	1.40
UPPER	2.01	1.49	0.77	2.82	1.24	0.80	0.62	3.68	1.41	1.91	3.54	4.71	3.92	2.50	2.30	1.84	4.04	5.32

Figure 36: Spatial Distribution of Positive Outliers, Montreal 1986.

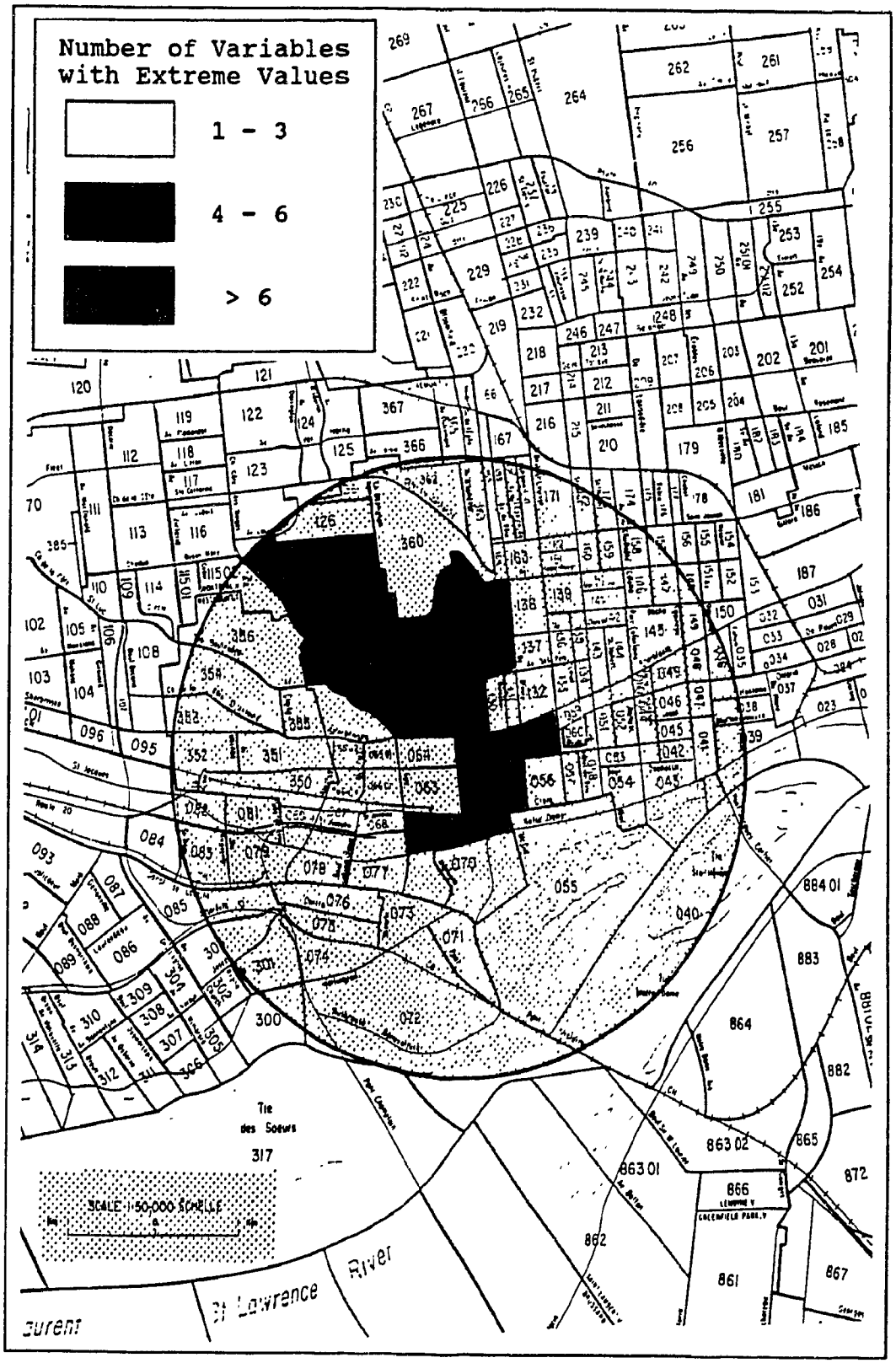


TABLE 17: OUTLIERS BY CENSUS TRACT FOR TORONTO, 1971

	M25-34	F25-34	TOTALO	TOTALR	NOCHILD	CHILD1	CHILD2	DEGREE1	DEGREE2	FPRATE	MMAN	MTEACH	MMED	MTECH	FMAN	FTEACH	FMED	FTECH	B1946
T11		0.6																	
T16		0.62								0.74									
T30	0.56				0.28					0.23									0.61
T31			0.01		0.45		0.92			0.65									0.14
T32																			4.32
T34						0.38	0.18												
T35		0.58				0.23											20.82		
139	0.61									0.62									0.84
T41							1												
T56						1.06	0.95												
T59						1.2													
T61	2.45					0.33		7.01				8.21		3.2					
T62	2.18		0.06	3.28	1.92			8.27	5.31	1.44			6.21	3.23		4.18		7.19	
T63	1.93	1.81	0.08	4.31		0.41	0.15		4.02	1.64			3.92	3.17			6.64	5.67	
T64				3.36										3.1					
T65	2.09	2.13	0.01	3.87											4.38				0.17
T86	0.62		1.28					5.07	3.95		2.97		5.5						
T87					1.59			5.41	5		3.66					3.26			
T89																3.23		5.8	
T90		1.66												3.73				8.17	
T91														3.04					
T92																3.39			
T94							1.06												
T115										0.73									
T116						1.06													
T117															5.13				
T118					1.65														
T119											2.85								
T121																		5.59	4.15
T122					1.79				4.31		2.27				4.93				
T124				3.37	1.8						2.9				4.27	3.34			
T125	0.65		1.43						4.08		3.15		3.96						
STD	0.43	0.35	0.33	0.95	0.37	0.22	0.24	1.95	1.49	0.25	0.95	1.62	1.33	1.04	1.41	1.23	3.11	2.15	0.87
MEAN	1.27	1.11	0.57	1.76	1.02	0.74	0.55	2.23	1.86	1.09	0.88	1.77	1.87	1.53	1.79	1.47	2.13	2.55	2.23
LOWER	0.68	0.62	0.10	0.43	0.51	0.43	0.21	-0.50	0.22	0.74	-0.45	-0.54	0.62	0.97	-0.19	-0.25	-2.22	-0.45	1.01
UPPER	1.87	1.60	1.03	3.09	1.53	1.05	0.83	4.95	3.95	1.43	2.10	4.06	3.73	2.98	3.77	3.18	6.47	5.56	3.45

Figure 37: Spatial Distribution of Positive Outliers, Toronto 1971.

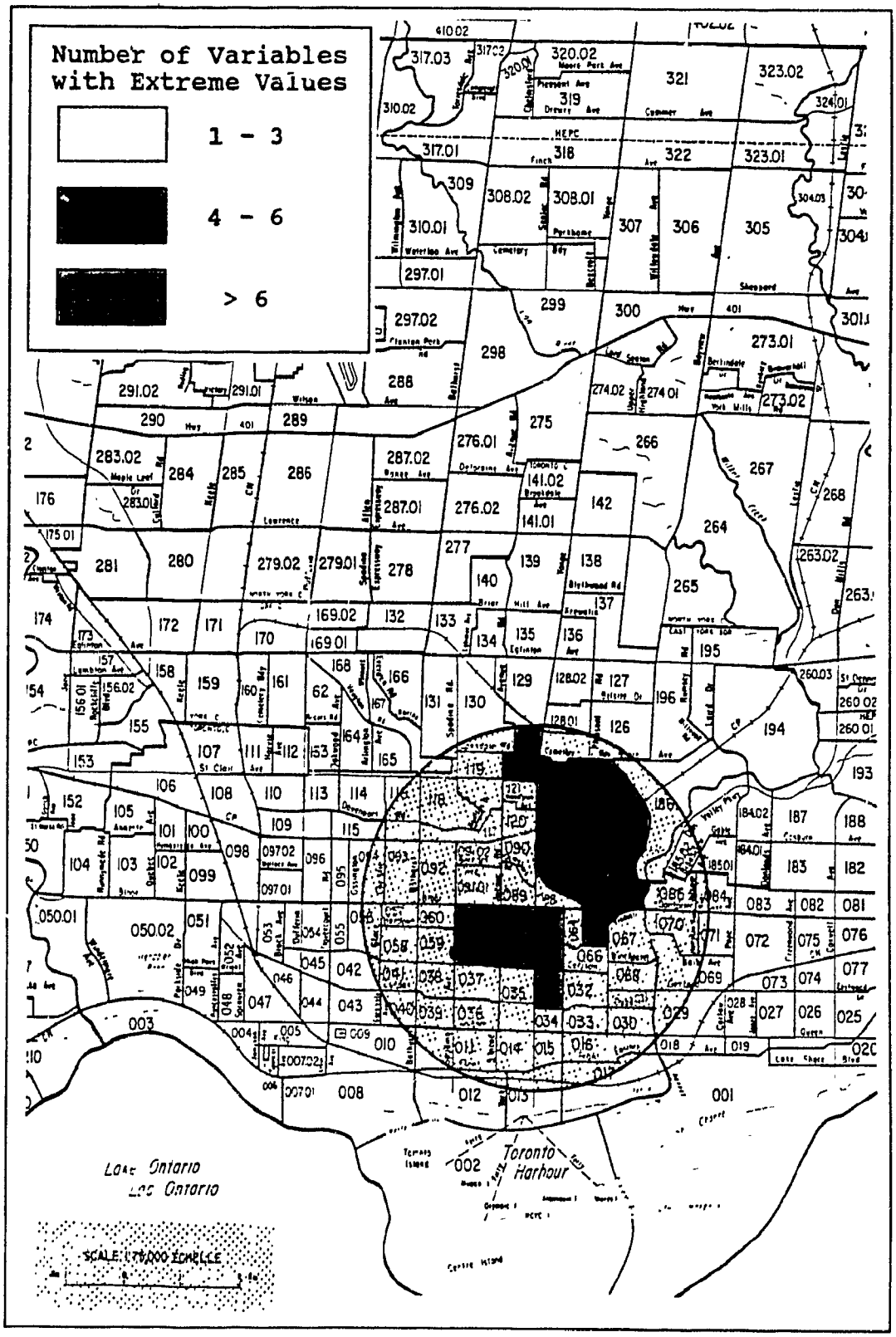


TABLE 18: OUTLIERS BY CENSUS TRACT FOR TORONTO, 1976

	M25-34	F25-34	TOTALO	TOTALR	NOCHILD	CHILD1	CHILD2	MDEGREE	FDEGREE	FFRATE
T11								7.27		
T16										0.68
T30	0.51	0.66			0.23					0.63
T31	0.65		0.01			1.11				0.59
T32		0.68								
T33										0.72
T34						0.25	0.09			
T39	0.68									0.74
T40	0.7	0.65								
T41						1.04	0.92			
T56						1.03	1.04			
T61	2.55		0.06		0.37					
T62	2.07	1.94	0.02	3.62	1.7				5.41	1.36
T63	2.23	1.74	0.04	4.66		0.35				1.48
T64	2.27	1.67	0.07	3.87		0.29	0.11			
T65			0.01	3.75		1.01				
T67			1.17			1.02				
T86	0.66		1.18					4.03		
T87					1.49			4.45	5.3	
T90		1.72								
T94							1.04			
T115				0.39			1.01			
T117										1.3
T118					1.66					
T121		1.66							5.9	
T121									5.46	
T122					1.82				5.47	
T124				3.56	1.56					
T125			1.36				0.92	4.1		
STD	0.46	0.35	0.75	1.04	0.35	0.20	0.25	1.44	1.82	0.19
MEAN	1.35	1.18	0.60	1.90	0.99	0.73	0.55	1.94	2.42	1.02
LOWER	0.71	0.69	0.11	0.45	0.50	0.45	0.20	-0.08	-0.12	0.76
UPPER	1.99	1.66	1.09	3.35	1.48	1.01	0.90	3.97	4.99	1.29

Figure 38: Spatial Distribution of Positive Outliers, Toronto 1976.

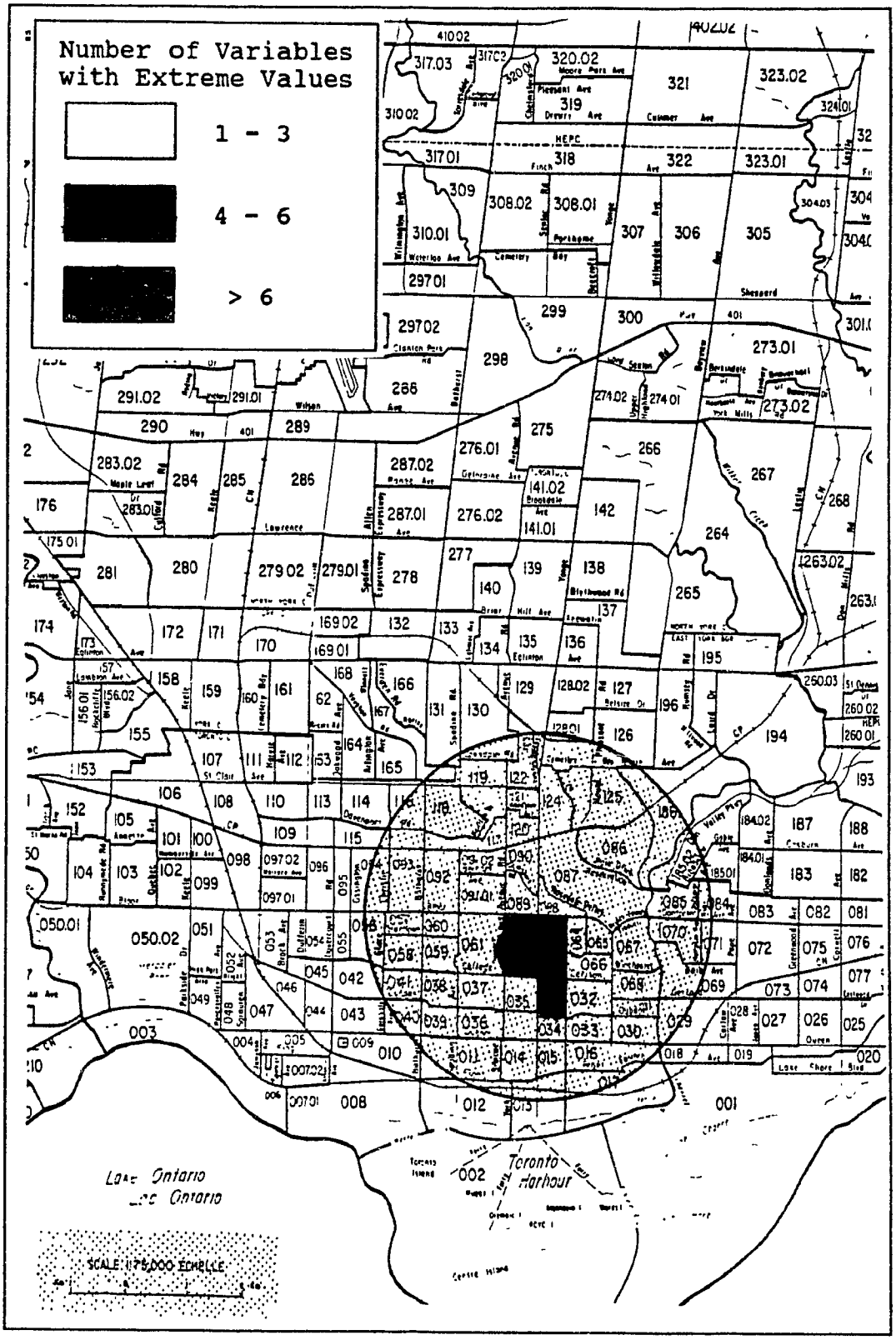


TABLE 19: OUTLIERS BY CENSUS TRACT FOR TORONTO, 1981

	M25-34	F25-34	TOTALO	TOTALR	NOCHILD	CHILD1	CHILD2	UDEGREE	FFRATE	MMAN	MTEACH	MMED	MTECH	FMAN	FTEACH	FMED	FTECH	B1946
T30	0.61				0.27			0.12	0.61				0.37				0.4	0.87
T31	0.61		0.01		0.39	1.16	1	0.23	0.64		0.11		0.12		0.13		0.42	0.57
T32						0.36												
T33								0.75										0.97
T34				3.8		0.2	0.06											
T35							0.08		1.27			5.34		3.27		7.59		0.47
T36	1.91	1.63																
T37																4.14		
T38										0.06								
T39					0.5				0.77									0.74
T40		0.73						0.2					0.31					
T41						1.06		0.37					0.21					
T56						1.06	0.95						0.32					
T61			0.05			0.39					6.42							
T62	1.94		0.03	3.95	1.66			5.21			4.19	6.29		3.43	2.76		5.17	
T63	2.4	1.68		4.63		0.31	0.07		1.73	2.16			3.36					
T64	1.99	1.72		4.24			0.12											
T65			0.02	3.85														0.23
T67			1.37			1.1							5.02				5.82	
T68						1.06												4.89
T70			0.08															
T86	0.57	0.59	1.23							2.15								
T87					1.44							4.85						
T89														3.25			5.09	
T90															3.52		5.86	
T91															2.66			
T92		1.65									3.75				3.03			
T94							1.04	0.4									0.29	
T115							0.95						0.28					
T117												5.77	3.38					5.8
T118					1.59							5.28						
T119										2.2								
T120			1.37									5.11	3.3				5.15	
T121			1.26					4.18		2.53				4.2			6.53	4.89
T122				0.31	1.53									3.41	2.91			
T124				3.58	1.5													
T125	0.62	0.7	1.36				1.06			2.1								
STD	0.42	0.31	0.40	1.11	0.31	0.22	0.28	1.25	0.15	0.69	1.17	1.55	1.00	1.12	0.88	1.21	1.59	1.33
MEAN	1.31	1.19	0.64	1.94	1.00	0.73	0.57	2.16	1.04	1.10	1.85	2.36	1.84	1.67	1.40	1.51	2.73	2.94
LOWER	0.72	0.75	0.08	0.39	0.56	0.43	0.14	0.41	0.82	0.13	0.21	0.19	0.44	0.10	0.16	-0.19	0.52	1.07
UPPER	1.90	1.62	1.21	3.50	1.44	1.04	0.92	3.91	1.25	2.06	3.49	4.53	3.24	3.23	2.63	3.21	4.95	4.81

Figure 39: Spatial Distribution of Positive Outliers, Toronto 1981.

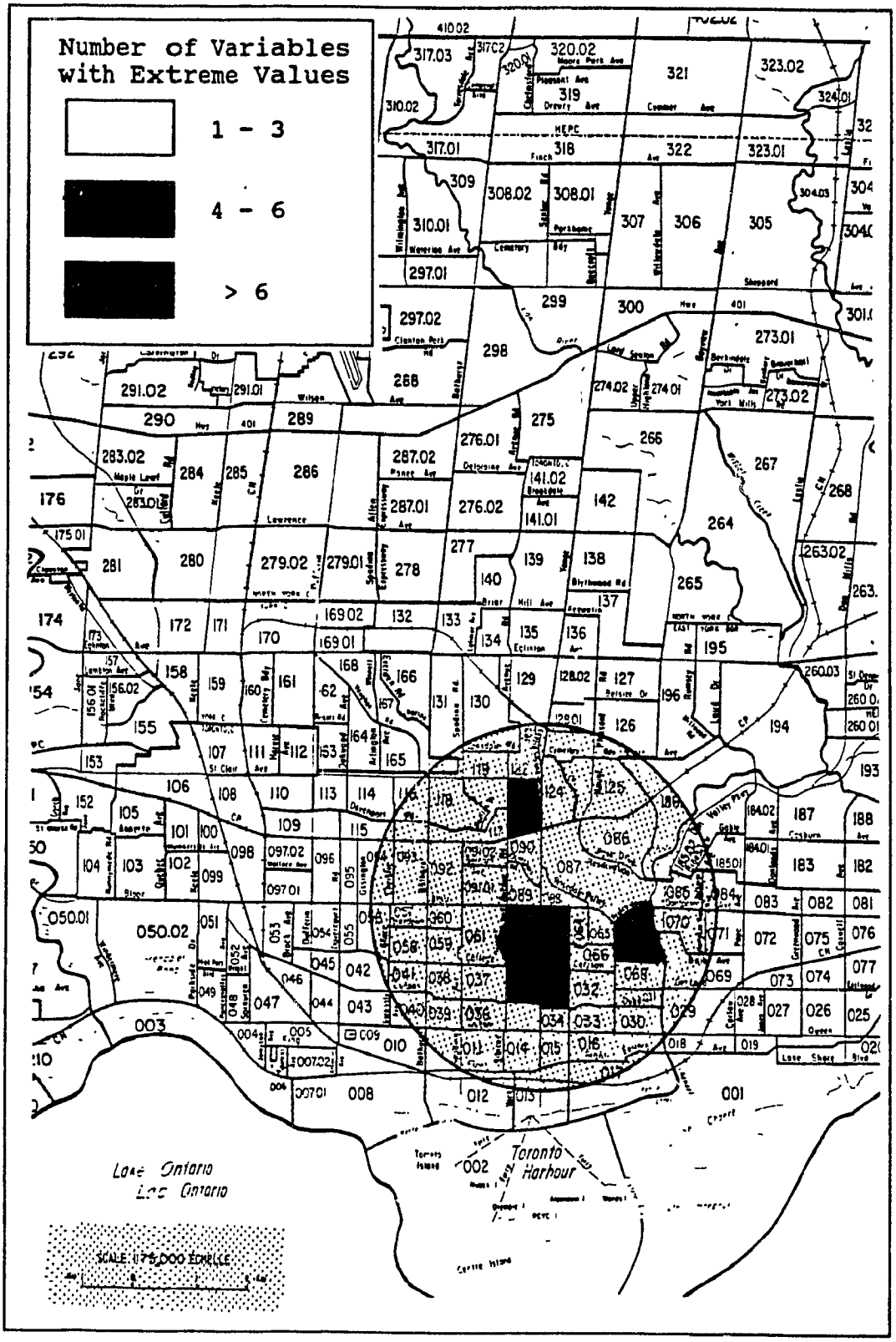


TABLE 20: OUTLIERS BY CENSUS TRACT FOR TORONTO, 1986

	M25-34	F25-34	TOTALD	TOTALR	NOCHILD	CHILD1	CHILD2	UDEGREE	FPRATE	MMAN	MTEACH	MMED	MTECH	FMAN	FTEACH	FMED	FTECH	B1946
T11	2.07								1.26									
T16												5.12						
T30					0.28			0.51	0.77			0.24	0.58				0.88	0.72
T31	0.71		0.02		0.39			0.2	0.63	0.03	0.1		0.22	0.2	0.05		0.17	0.65
T33									0.76								0.8	
T34																		0.73
T35		2.1	0.03		1.49	0.2	0.08		1.35			5.18				6.38		0.22
T36		1.63																
T37												5.01				3.7		
T38												0.3		0.4				
T39		0.81						0.65	0.79		0.18		0.76	0.35				
T40				0.44				0.47		0.23	0.13		0.49	0.34				
T41				0.45		1.01		0.52				0.25	0.45				0.38	
T56						1.01	0.83											
T60									1.32		6.32				2.43		4.8	
T61			0.05			0.22					6.09				4.1			
T62		1.63		3.78	1.66			4.05			4.8							0.96
T63.1	2.43		0.06	4.85		0.13			1.31									
T63.2	2.33	1.64		4.36			0.06		1.34				3.22					
T64				4.16														
T65			0.03	3.78														0.27
T67			1.35			1.01							3.63					5.9
T86	0.63	0.67	1.24				0.91											
T87	0.69	0.75	1.25															
T09			1.25		1.58					2.81		4.11						
T90													3.2				5.62	
T91.1																	4.51	
T92		1.7			0.3												5.15	
T93				0.45		0.95												
T94				0.4		0.98	0.88	0.62		0.23		0.16	0.76	0.38				
T115							0.88											
T117																	4.45	5.46
T120			1.39							2.22								
T121			1.3							2.17				3.55				
T122					1.56									3.26				
T124					1.53													
T125	0.62	0.75	1.37				1.1			2.27					2.51			
STD	0.42	0.29	0.39	1.13	0.33	0.23	0.25	1.07	0.16	0.68	1.25	1.34	0.84	0.84	0.76	0.97	1.19	1.48
MEAN	1.34	1.21	0.65	2.06	0.99	0.61	0.46	2.25	1.03	1.19	2.06	2.18	2.00	1.59	1.25	1.38	2.55	3.09
LOWER	0.75	0.81	0.10	0.47	0.52	0.29	0.11	0.75	0.81	0.24	0.18	0.30	0.83	0.42	0.19	0.02	0.89	1.02
UPPER	1.93	1.62	1.20	3.65	1.46	0.94	0.82	3.75	1.25	2.14	3.95	4.06	3.17	2.76	2.31	2.74	4.22	5.16

Figure 40: Spatial Distribution of Positive Outliers, Toronto 1986.

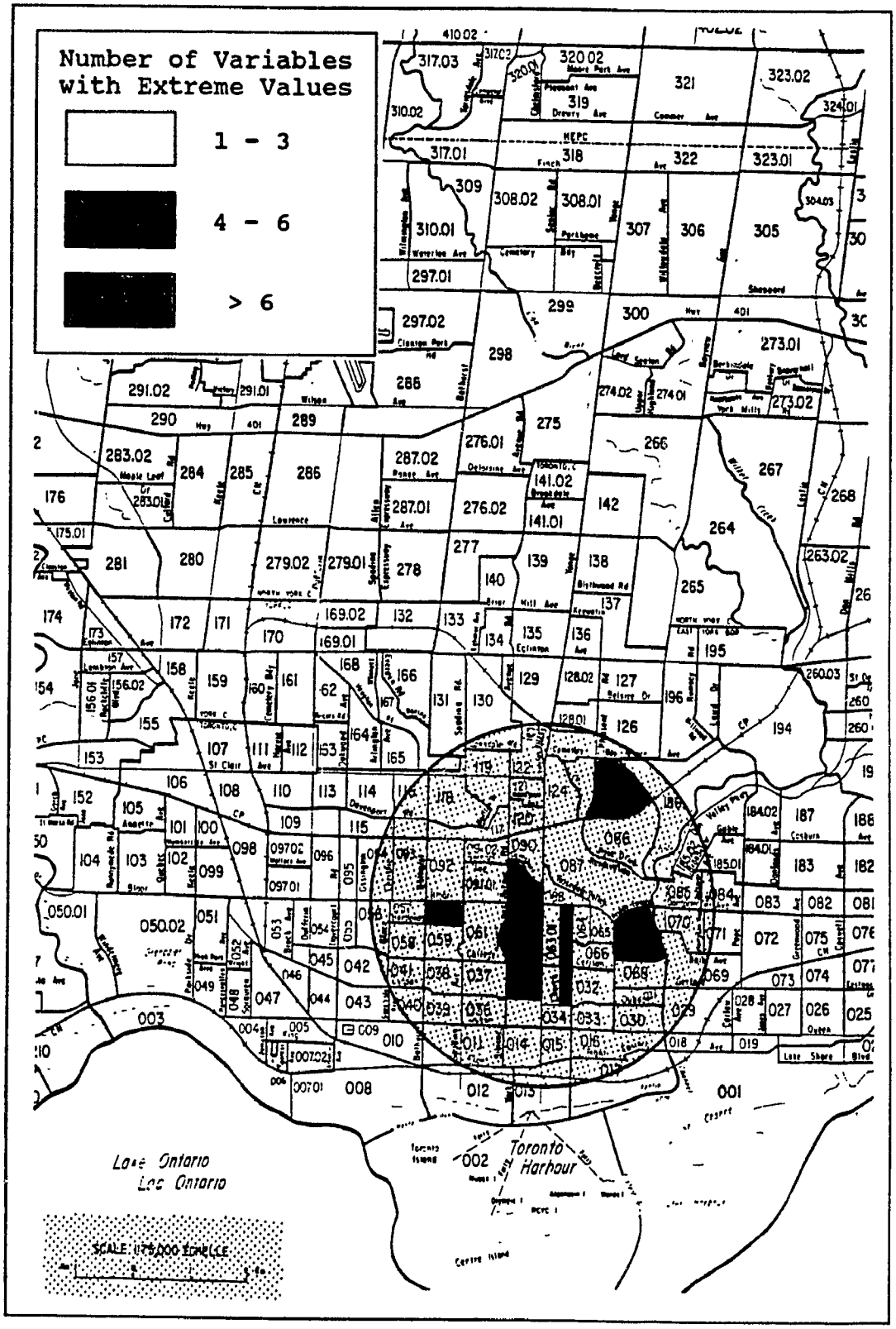


TABLE 21: OUTLIERS BY CENSUS TRACT FOR VANCOUVER, 1971

	M25-34	F25-34	TOTALO	TOTALR	NOCHILD	CHILD1	CHILD2	DEGREE1	DEGREE2	FFRATE	MMAN	MTEACH	MMED	MTECH	FMAN	FTEACH	FMED	FTECH	B1946
V39			0.34														7.51		
V40												3.38			4.27	2.22	5.93		
V47								3.7				2.2		2.96	4.34	3.07		4.83	
V48			0.42						0.24										3.36
V49										0.86			0.11	0.26	0.2			0.38	
V57	0.59			1.56						0.97				0.38					
V58	0.62	0.37		0.8		0.29		0.14			0.04			0.42				0.36	
V59		0.31		1.25	0.5	0.18				1.69									
V60	2.37								2.82										0.61
V61					2.5				3		2.31								0.57
V62						1019	0.67												
V63																		4.55	3.95
V66																			
STD	0.51	0.51	0.11	1.25	0.48	0.26	0.17	0.93	0.69	0.24	0.61	0.50	0.80	0.78	1.21	0.72	2.11	1.28	0.91
MEAN	1.52	1.31	0.17	3.45	1.38	0.73	0.31	1.46	1.50	1.34	0.91	0.80	1.26	1.61	2.20	1.18	2.27	2.21	1.93
LOWER	0.81	0.60	0.02	1.70	0.70	0.37	0.06	0.15	0.24	1.00	0.06	0.09	0.13	0.52	0.51	0.18	-0.68	0.41	0.66
UPPER	2.24	2.02	0.33	5.19	2.05	1.09	0.55	2.77	2.75	1.68	1.76	1.50	2.38	2.69	3.89	2.19	5.22	4.00	3.20

Figure 41: Spatial Distribution of Positive Outliers, Vancouver 1971.

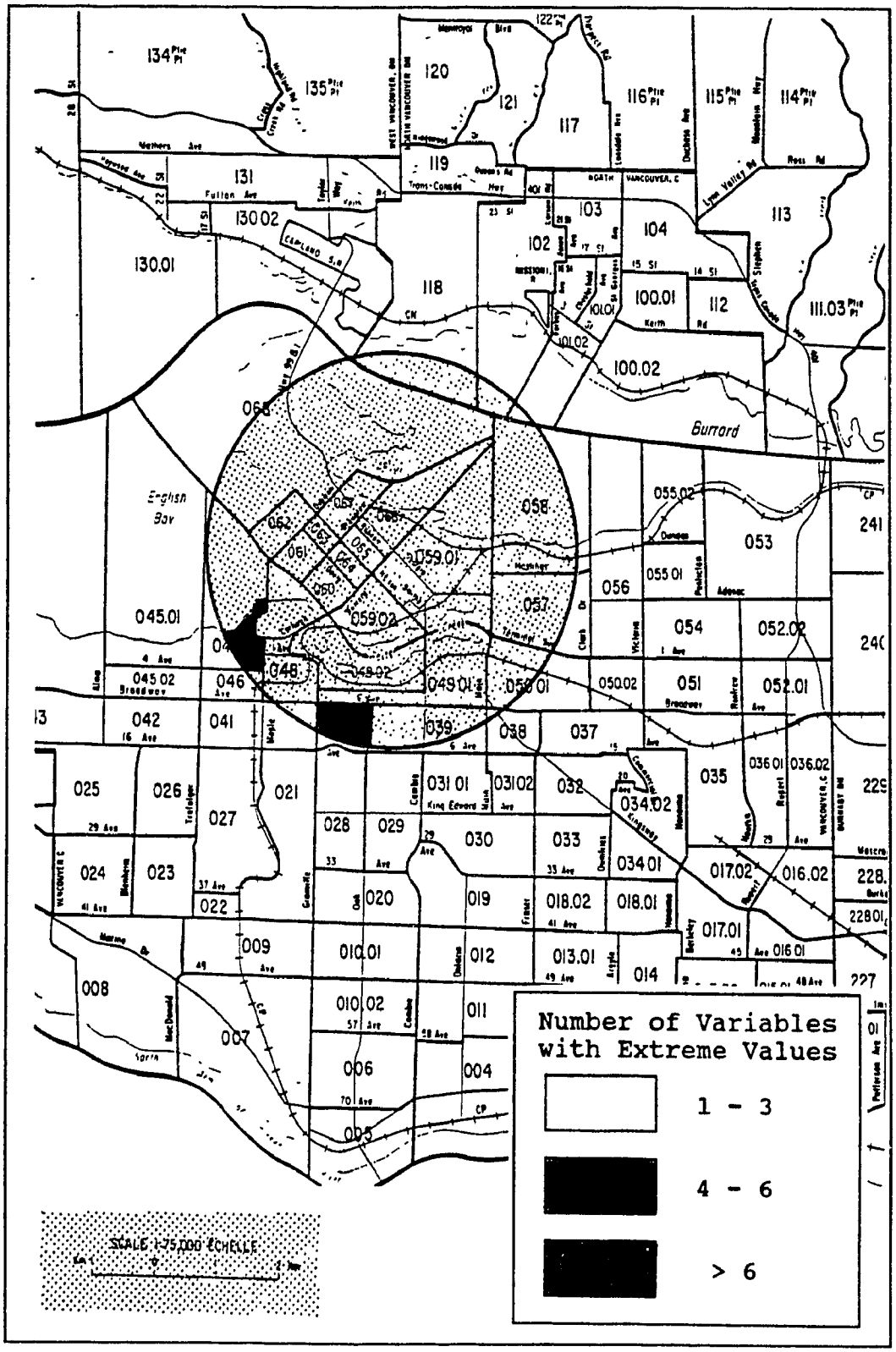


TABLE 22: OUTLIERS BY CENSUS TRACT FOR VANCOUVER, 1976

	M25-34	F25-34	TOTALO	TOTALR	NOCHILD	CHILD1	CHILD2	MDEGREE	FDEGREE	FPRATE
V47		2.11						2.68	3.94	
V48			0.58							
V49							0.41			
V57	0.66	0.54		1.46			0.53	0.32		0.8
V58	0.55	0.3		0.95	0.28			0.25	0.11	0.73
V59		0.23		0.6	0.13	0.06			0.17	
V62			0.58					2.76		
V63						0.94				
STD	0.46	0.52	0.17	1.30	0.48	0.21	0.13	0.70	0.99	0.21
MEAN	1.50	1.29	0.24	3.44	1.17	0.58	0.21	1.57	1.61	1.18
LOWER	0.85	0.56	0.01	1.62	0.49	0.28	0.03	0.60	0.22	0.89
UPPER	2.14	2.02	0.48	5.26	1.85	0.88	0.40	2.54	3.00	1.48

Figure 42: Spatial Distribution of Positive Outliers, Vancouver 1976.

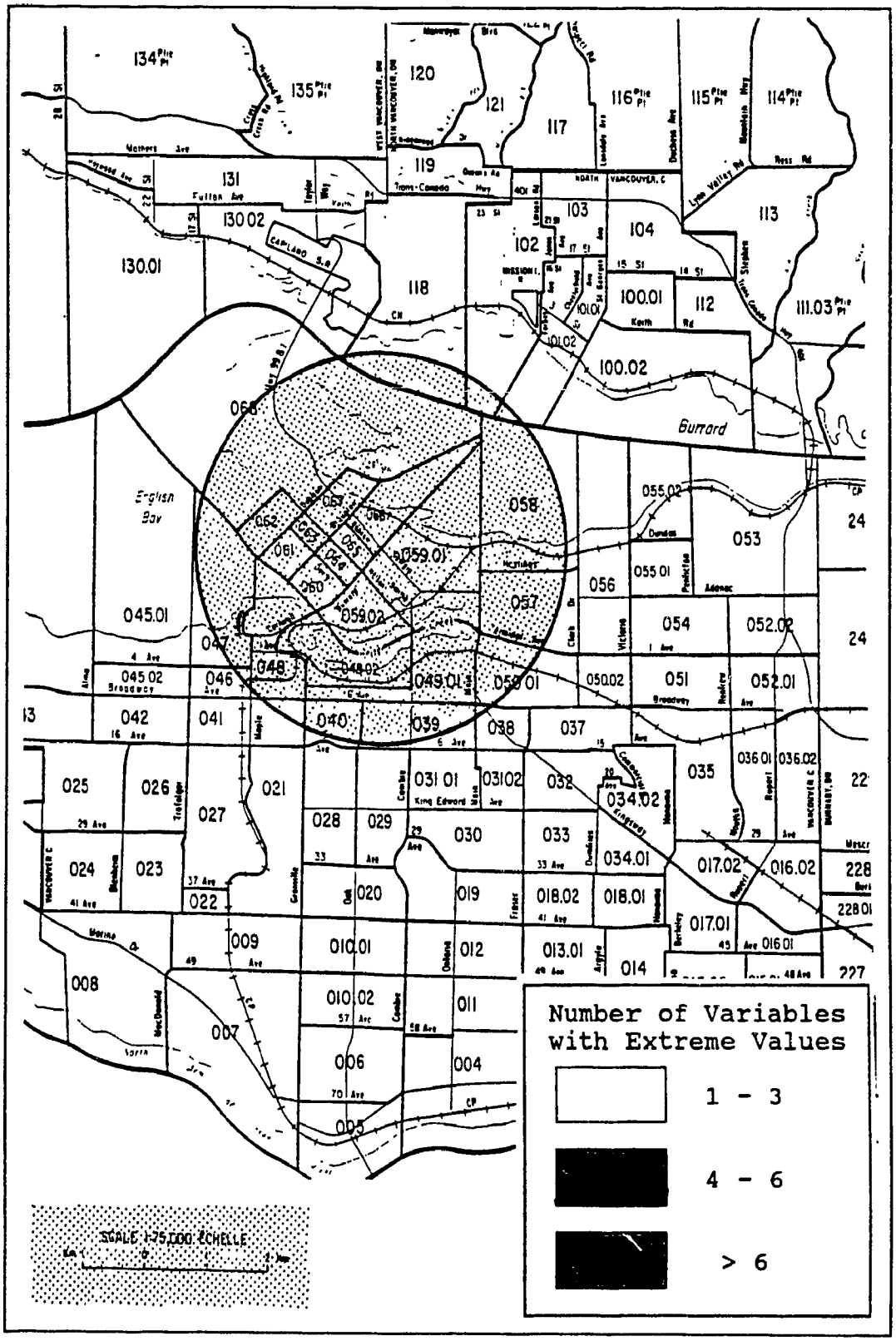


TABLE 23: OUTLIERS BY CENSUS TRACT FOR VANCOUVER, 1981

	M25-34	F25-34	TOTALO	TOTALR	NOCHILD	CHILD1	CHILD2	UDEGREE	FPRATE	MMAN	MTEACH	MMED	MTECH	FMAN	FTEACH	FMED	FTECH	B1946
V39										0.49						2.94		
V40																3.44		
V47		2.17													3.14	2.98	3.72	
V48		2.12	0.66											3.95				
V49.1												2.69						4.39
V49.2			0.73			1.42	1.08	2.97			1.9	2.68						
V57	0.85			1.41			0.63	0.36	0.76	0.21	0.3	0.19	0.51	0.19			0.27	
V58	0.9	0.3			0.22			0.43	0.66	0.31	0.24	0.3	0.57	0.15			0.17	
V59.1	0.95	0.28		0.22	0.02			0.61	0.82		0.29			0.26			0.31	
V60														3.32				
V62			0.61		1.89													
V66									1.47									3.99
V67												2.61						
STD	0.43	0.53	0.22	1.20	0.43	0.32	0.26	0.76	0.21	0.38	0.47	0.69	0.66	1.07	0.77	0.95	1.07	1.08
MEAN	1.60	1.33	0.29	3.15	1.03	0.58	0.24	1.71	1.14	1.04	1.04	1.65	1.84	1.77	1.13	1.41	1.83	1.69
LOWER	1.00	0.59	-0.01	1.48	0.43	0.13	-0.12	0.65	0.84	0.51	0.38	0.69	0.92	0.27	0.05	0.08	0.33	0.17
UPPER	2.20	2.07	0.59	4.83	1.63	1.03	0.59	2.77	1.43	1.56	1.70	2.61	2.76	3.26	2.20	2.75	3.33	3.21

Figure 43: Spatial Distribution of Positive Outliers, Vancouver 1981.

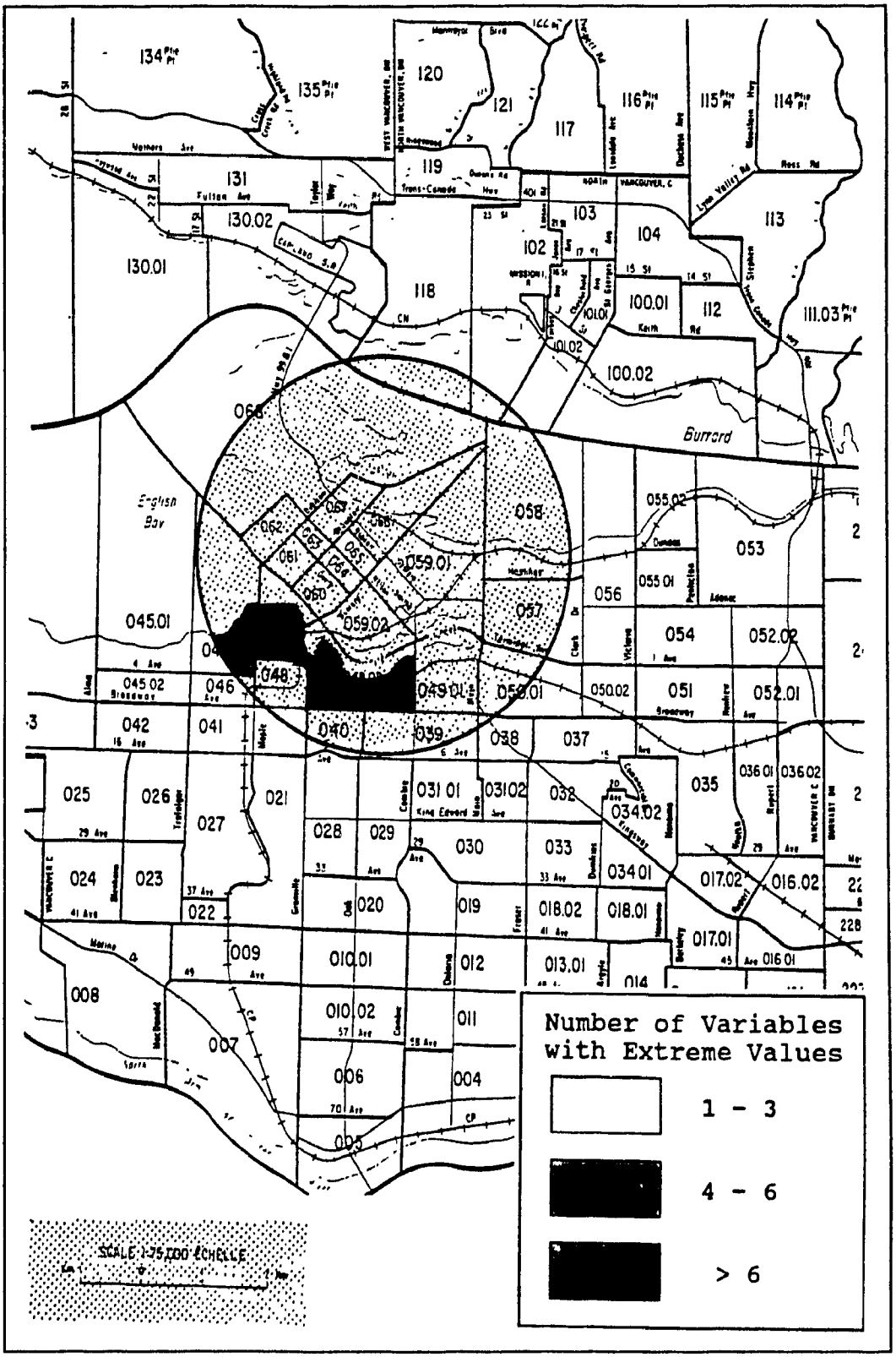


TABLE 24: OUTLIERS BY CENSUS TRACT FOR VANCOUVER, 1986

	M25-34	F25-34	TOTALO	TOTALR	NOCHILD	CHILD1	CHILD2	UDEGREE	FPRATE	MMAN	MTEACH	MMED	MTECH	FMAN	FTEACH	FMED	FTECH	B1946
V39																2.95		
V40		2.19													2.3			
V47								3.08										
V48		2.15	0.7															
V49.1			0.88	2.25				3.02		2.28		3.83		3.08				
V49.2				2.28		0.98	0.56			2.36								
V57	0.82			2.13			0.56	0.49	0.73	0.24			0.62	0.19				
V58	1.01	0.48			0.46			0.19	0.52	0.35			0.56	0.36				6.08
V59.1		0.4			0.33	0.02		0.55	0.67		0.17			0.44		0.12	0.17	
V59.2				2.29														
V62			0.68		1.75													
V64												3.66						
V66													3.63					
STD	0.36	0.52	0.24	0.69	0.35	0.23	0.15	0.86	0.24	0.56	0.57	0.97	0.74	0.91	0.72	0.82	1.39	2.45
MEAN	1.57	1.39	0.34	3.29	1.05	0.36	0.17	1.82	1.09	1.22	1.32	1.75	1.91	1.78	1.04	1.28	2.18	2.56
LOWER	1.06	0.66	0.01	2.32	0.56	0.04	-0.04	0.62	0.76	0.44	0.53	0.39	0.87	0.50	0.02	0.14	0.24	-0.87
UPPER	2.08	2.12	0.68	4.25	1.55	0.69	0.39	3.02	1.42	2.00	2.11	3.11	2.95	3.06	2.05	2.42	4.12	5.98

Figure 44: Spatial Distribution of Positive Outliers, Vancouver 1986.

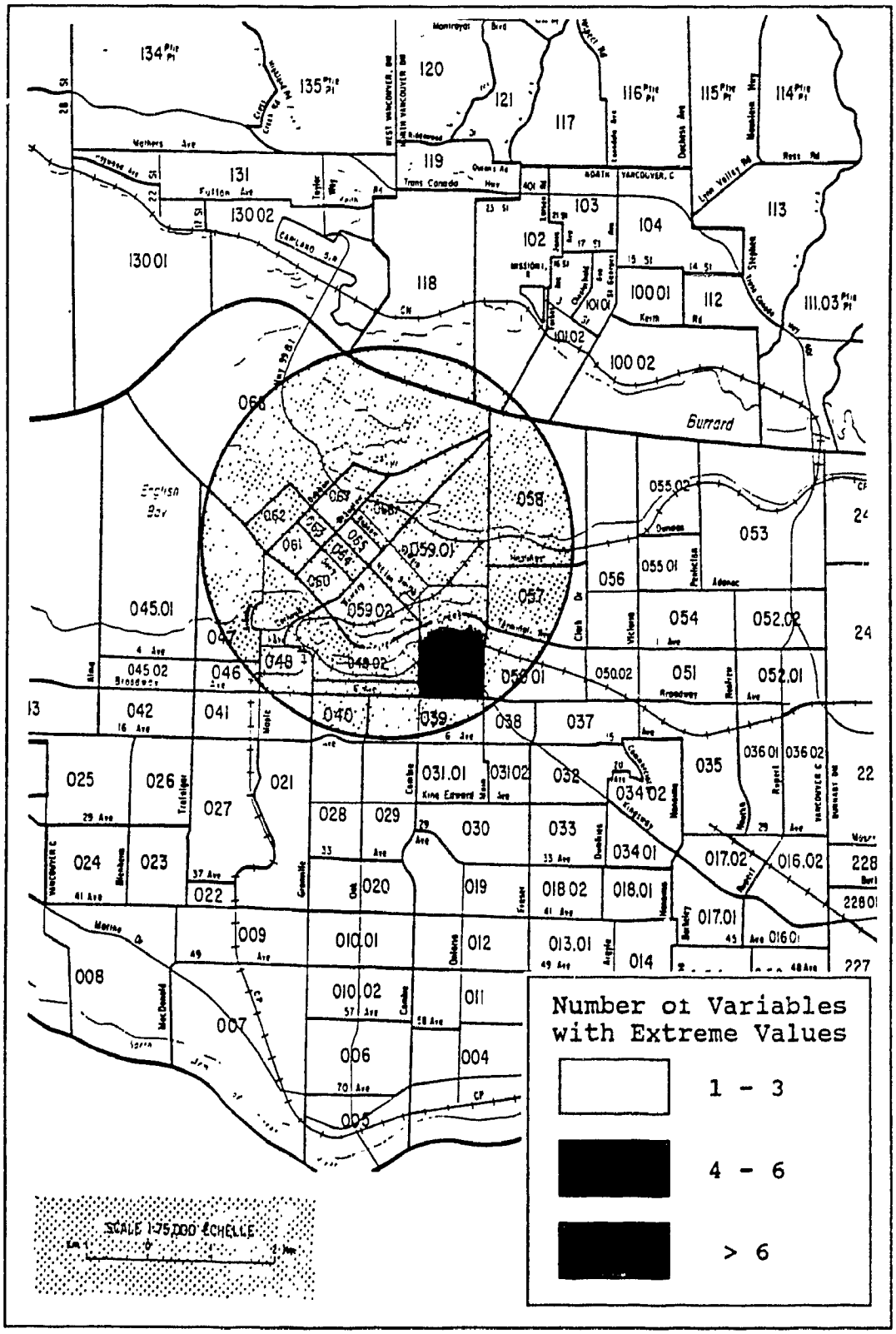


TABLE 25: OUTLIERS BY CENSUS TRACT FOR WINNIPEG, 1971

	M25-34	F25-34	TOTALO	TOTALR	NOCHILD	CHILD1	CHILD2	DEGREE1	DEGREE2	FFRATE	MMAN	MTEACH	MMED	MTECH	FMAN	FTEACH	FMED	FTECH	B1946
W12								2.4	2.72			1.53		2.56		2.53		3.51	
W13		0.59	0.04			0.45	0.15				0.98								
W14			0.03	4.56	1.77		0.13				0.88			2.01	3.24			3.97	
W15												1.47							2.9
W24		0.46				0.46									3.4				
W25					0.64														
W27	1.44	1.44				1.25		1.9		1.41			7.18				10.99		1.41
W28						1.22	0.82												
W76	0.72									0.61									
STD	0.25	0.23	0.24	1.07	0.30	0.24	0.21	0.76	0.89	0.23	0.32	0.46	1.80	0.70	0.97	0.73	2.66	1.30	0.44
MEAN	1.08	0.94	0.40	2.43	1.08	0.82	0.51	0.81	1.38	1.04	0.42	0.80	1.29	0.84	1.36	0.89	1.86	1.40	2.11
LOWER	0.74	0.61	0.07	0.94	0.66	0.48	0.22	-0.25	0.03	0.71	-0.03	0.15	-1.23	-0.15	0.01	-0.13	-1.86	-0.41	1.50
UPPER	1.43	1.27	0.73	3.92	1.49	1.15	0.81	1.88	2.53	1.36	0.87	1.44	3.81	1.82	2.72	1.90	5.59	3.22	2.72

Figure 45: Spatial Distribution of Positive Outliers, Winnipeg 1971.

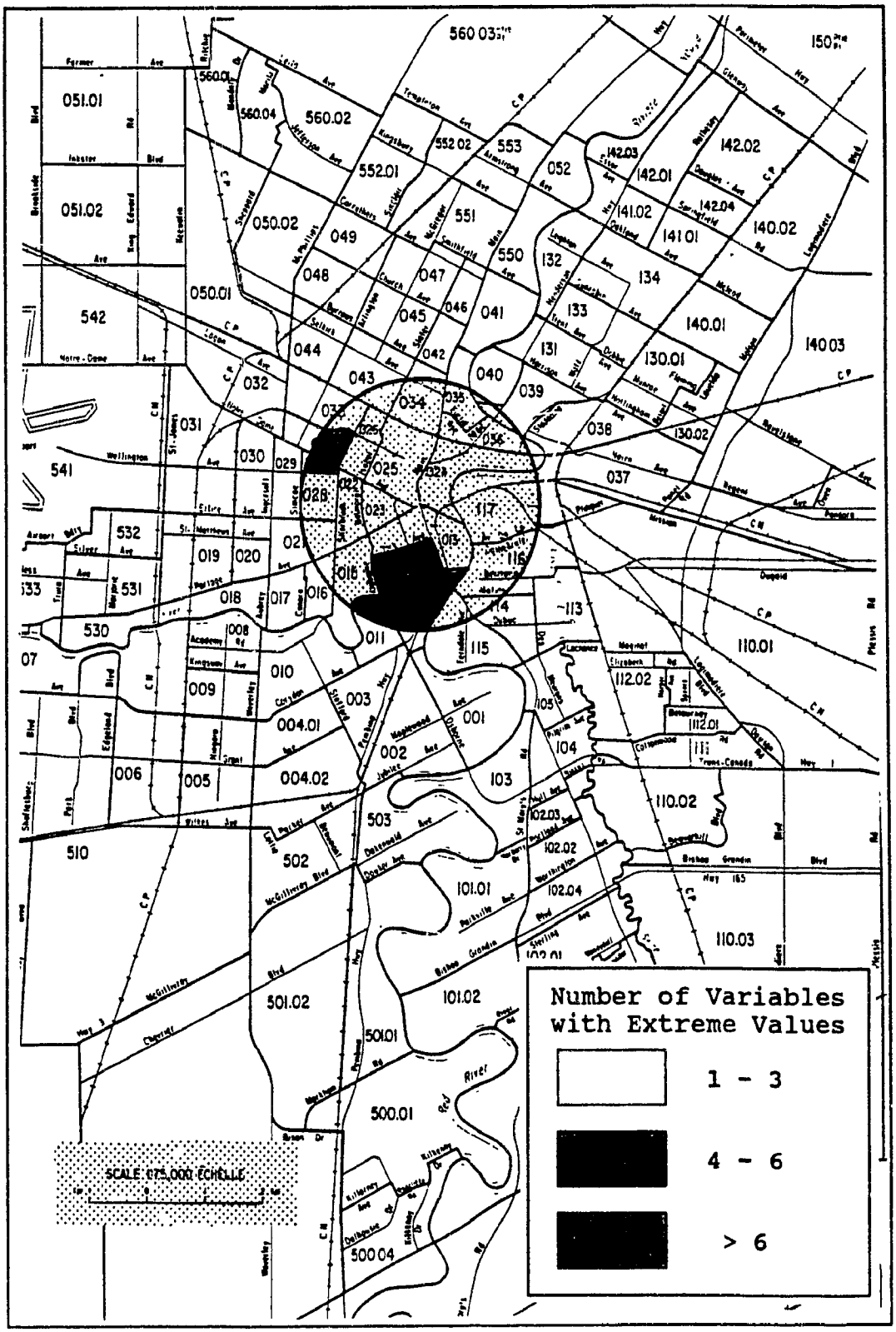


TABLE 26: OUTLIERS BY CENSUS TRACT FOR WINNIPEG, 1976

	M25-34	F25-34	TOTALO	TOTALR	NOCHILD	CHILD1	CHILD2	MDEGREE	FDEGREE	FPRATE
W12	1.55									
W13			0.02	4.6		0.38	0.08	2.22	2.28	
W14			0.03	4.82	1.36					
W23			0.04							
W24		0.46			0.53					
W25					0.57					
W27			0.77			1.3	0.74			
W34	0.55									
W35				0.9						
W36	0.62	0.49								0.35
STD	0.32	0.30	0.24	1.20	0.24	0.25	0.21	0.65	0.77	0.25
MEAN	1.07	0.99	0.38	2.58	0.97	0.77	0.45	0.83	1.08	0.93
LOWER	0.62	0.57	0.04	0.91	0.63	0.42	0.15	-0.09	0.00	0.58
UPPER	1.52	1.41	0.72	4.26	1.30	1.12	0.74	1.74	2.16	1.28

Figure 46: Spatial Distribution of Positive Outliers, Winnipeg 1976.

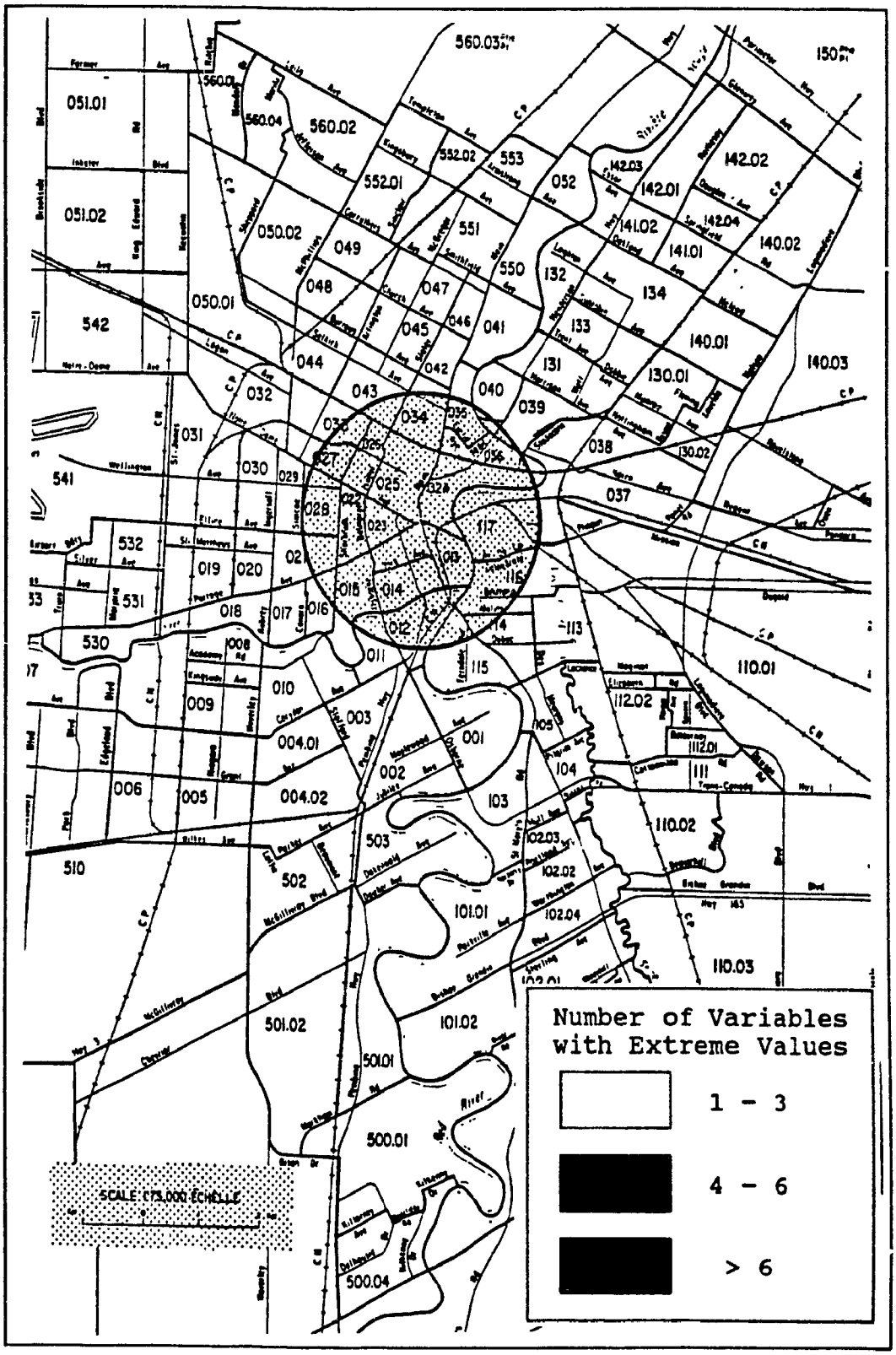


TABLE 27: OUTLIERS BY CENSUS TRACT FOR WINNIPEG, 1981

	M25-34	F25-34	TOTALO	TOTALR	NOCHILD	CHILD1	CHILD2	UDEGREE	FPRATE	MMAN	MTEACH	MMED	MTECH	FMAN	FTEACH	FMED	FTECH	B1946
W12	1.7	1.4			1.08			1.79			1.51						2.83	
W13			0.01	4.29	1.09	0.23	0.05			1.46			1.96					0.8
W14	1.69		0.01	4.82	1.13		0.12	1.97		1.26		2.67	2.1	2.19				
W15																1.8		3.44
W24		0.42				0.42			0.53						2.95			
W27			0.84													1.79		
W28						1.12	0.87											
STD	0.36	0.28	0.26	1.20	0.20	0.23	0.24	0.56	0.20	0.45	0.47	0.77	0.65	0.65	0.77	0.50	0.73	0.59
MEAN	1.00	0.93	0.39	2.37	0.78	0.77	0.48	0.84	0.07	0.48	0.50	1.28	0.81	0.75	1.07	0.97	0.95	2.11
LOWER	0.50	0.54	0.03	0.69	0.50	0.45	0.15	0.05	0.58	-0.14	-0.09	0.21	-0.10	-0.16	-0.01	0.27	-0.08	1.29
UPPER	1.51	1.32	0.75	4.05	1.06	1.10	0.82	1.63	1.15	1.11	1.24	2.36	1.73	1.65	2.15	1.66	1.97	2.93

Figure 47: Spatial Distribution of Positive Outliers, Winnipeg 1981.

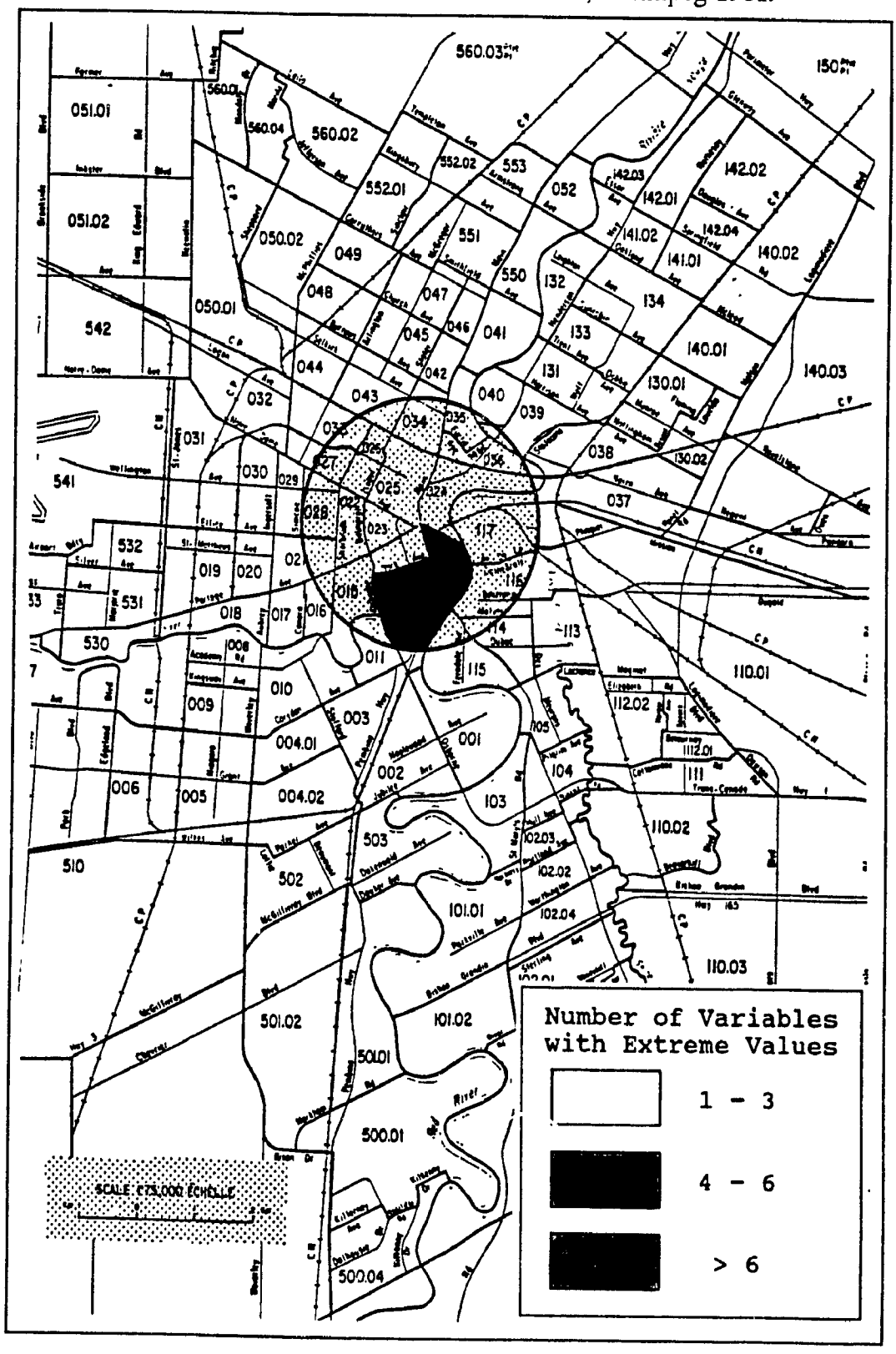
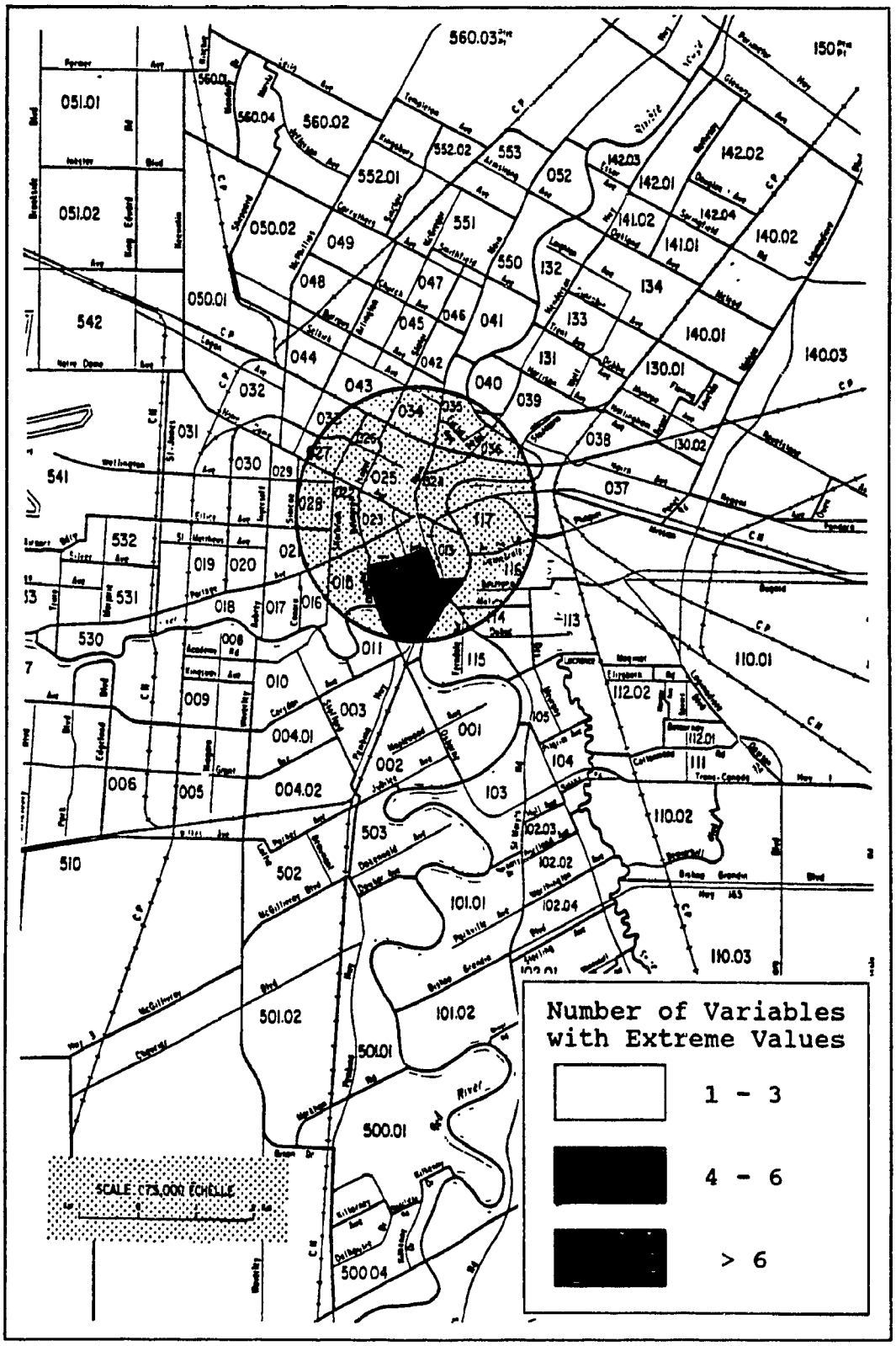


TABLE 28: OUTLIERS BY CENSUS TRACT FOR WINNIPEG, 1986

	M25-34	F25-34	TOTALD	TOTALR	NOCHILD	CHILD1	CHILD2	UDEGREE	FPRATE	MMAN	MTEACH	MMED	MTECH	FMAN	FTEACH	FMED	FTECH	B1946
W12	1.78	1.51			1.04		0.17	1.66							1.07	1.73	2.55	
W13										1.18								0.87
W14	1.91	1.49	0.02	4.76	1.02		0.1	1.7			1.6		2.11				2.55	
W15																		2.96
W23																		1.09
W24						0.18								1.54				
W27			0.81									3.28				1.41		
W28							0.72											
W24									0.49									
W25	0.64																	
W26							0.72		0.49									
STD	0.35	0.28	0.23	1.17	0.19	0.25	0.18	0.53	0.19	0.31	0.45	0.83	0.56	0.54	0.30	0.42	0.75	0.61
MEAN	1.15	0.95	0.35	2.43	0.69	0.56	0.45	0.70	0.83	0.42	0.60	1.40	0.72	0.63	0.54	0.75	0.93	1.98
LOWER	0.66	0.56	0.03	0.79	0.43	0.22	0.19	-0.04	0.57	-0.01	-0.03	0.23	-0.07	-0.13	0.12	0.17	-0.12	1.13
UPPER	1.64	1.35	0.66	4.07	0.96	0.91	0.71	1.44	1.09	0.85	1.22	2.56	1.50	1.38	0.96	1.34	1.99	2.83

Figure 48: Spatial Distribution of Positive Outliers, Winnipeg 1986.



CHAPTER V: SUMMARY AND CONCLUSIONS

Over the past two decades, the literature regarding gentrification has become extensive. As a result, researchers have employed a variety of approaches to assist in a better understanding of how such a process shapes the inner city environment. One of the more common approaches relates to the description and characterization of a population that is interested in gentrification. This population, which have been termed *gentrifiers*, is generally known to be young, highly educated professionals, with few or no children. Thus, by choosing the inner city as a place of residence, these individuals were reflecting a specific set of needs which could not be met in other areas of the urban centre. These needs included closeness to services and the workplace, and a desire to participate in leisure activities common to the central city, such as restaurants, theatre, and so on. Overall, this type of research tends to view gentrifiers as a distinctive part of the social fabric of the central city.

More recently, a smaller body of research has emerged. This research accepts some of the views mentioned above, but places an emphasis on the overall forces which cause such a population to choose the inner city over other areas as a place of residence. Moreover, this research theorizes that the role of the contempory working woman is an important part of the social, demographic, and economic factors which are now present in modern day society. Thus, some researchers point out that working women may be an important link and contributor to the process of gentrification. Another important, if not essential aspect of this literature, is that

gentification is a complex and varied phenomenon, and occurs at a number of different levels, with a number of different actors (Beauregard 1990).

The purpose of this thesis has been to consider these two bodies of literature in terms of whether a link can be made between contemporary demographic and societal changes and the process of gentrification. Thus, by analysing core neighbourhoods in of Montreal, Toronto, Vancouver, and Winnipeg as a whole, the results show that although some aspects of the known characteristics of gentrification and the theory discussed in this thesis may be confirmed, it is clear that some aspects may not.

To summarize, after careful inspection of the variables selected for this research, a variety of inner city patterns emerge. These patterns include a general decline in core neighbourhood population, an increase in the proportion of young males and male professionals, a decrease in the number of small families, and a very high, and sometimes increasing proportion of individuals with university degrees. In terms of females, there is a relatively stable but even distribution of young females throughout the inner city and the surrounding CMA, as well as a fairly even distribution of working women. However, the proportion of working women that is in core neighbourhoods is generally decreasing over time. Female professionals, although seeming to be more concentrated in core neighbourhoods, have also been decreasing over the given time period.

In terms of the results of this thesis, only the findings for young males, male professionals, individuals with university degrees, and to a limited extent female professionals, can lend support to the well known characteristics or definition of gentrification. Other aspects which include working females, and small families are

clearly decreasing, and therefore can not be seen to support the evidence for gentrification. With regard to the female variables, it is clear that since young working women are fairly evenly dispersed throughout the entire CMA, and that the proportion of professional women is decreasing in core neighbourhoods, the link between these women and the gentrification process can not be supported.

However, when individual census tracts are examined, it becomes clear that some areas contain tracts which are likely candidates for gentrification. By examining individual location quotients and outliers, these areas can be easily identified for detailed study. Moreover, since many of these outliers contain a high proportion of gentrifying variables, when compared to the CMA, these tracts serve as strong support for gentrification in the inner city. Further, while some outliers have weakened over time, most have remained largely unchanged and still maintain a concentration that is higher than the rest of the inner city and the CMA.

Overall, the results for this thesis indicate that the inner city is being shaped by a number of complex forces and trends. Some of these trends, such as the decline of small families (0 to 2 children) and the increase in young males and university degrees, can be explained by a large proportion of single people and childless couples, many of whom are university oriented. Other trends, such as the decline of women professionals and working women in general, suggests that while the inner city is still attractive to some, it is not more attractive than other areas, such as the suburbs. In fact, in some instances, like Winnipeg, the inner city is even less attractive to this population. Thus, while it is an indisputable fact that many inner city neighbourhoods in Canada have been upgraded socially and aesthetically by both gentrification and condominium development (Bourne 1989, pp. 325), the

results of this research suggest that when the inner city as a whole is compared to the rest of the CMA, by 1986 some of the well known contributors to this process do not seem to be as predominant as they may have been in the past. Moreover, while the inner city is an attractive locational choice to some, it is not able to compete as well for housing demand as some of the more peripheral areas can.

This thesis has provided more information about change in the Canadian inner city, and some of the underlying forces which have contributed to this change. However, there is still more work to be done. For instance, some additional age group variables could yield results which may explain further about the type of population who chooses to stay in the inner city. In addition, a measure of ethnicity could provide more information about the social and economic changes which are occurring in this area (Weiss 1986, pp. 226). Further, a factor analysis could be utilized as a means of gaining a number of explanatory factors which could offer a better understanding of the forces which shape the inner city environment. Finally, while it was the intention of this thesis to provide a link between contemporary social forces and the gentrification process, this still remains an open research question. Thus, more research which draws on a variety of theoretical perspectives and data sources may yield a better understanding of how this link fits into the fabric of a modern urban society.

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